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Railway Age Gazette

Volume 62

June 8, 1917

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* Illustrated.

Never before has the problem of car interchange been as complicated as at present. Many railway men who are not interested directly in this subject during normal times have been forced to study the rules and their enforcement recently. The changing of rules themselves in an endeavor to meet the altered conditions has also forced railway men to devote their attention to this subject. The contest on Car Interchange which is now closing is, therefore, of direct interest to many railway men. It is to be hoped that those who have given this problem consideration will give other men the benefit of their conclusions through contributions to the contest and that the ideas presented in the papers received will be of material assistance in the preparation of the rules which will be adopted ultimately. A prize of \$50 has been offered by a railway man interested in this subject for the best concrete plan of car interchange between railroads which will give working effect to the principle laid down by the American Railway Association, that each road is entitled to the possession of cars equal to its ownership. The *Railway Age Gazette* is glad to offer a second prize of \$35 for the next best paper submitted and will also pay its regular space rates for all papers which are accepted by it for publication. All papers to be entered in this contest must be mailed to the editor of the *Railway Age Gazette*, 608 South Dearborn street, Chicago, not later than June 10.

The Contest on Car Interchange

The *Railway Age Gazette* showed in an editorial in its issue for June 1, page 1,131, the groundlessness of the oft-repeated charge that the railways have not recently been moving the normal amounts of grain and flour eastward from Chicago. There has been a similar outcry against the roads for not having moved recently a normal amount of coal from the various points of origin to Chicago. As in the case of grain and flour, the best answer to these allegations are the actual statistics showing the amount of coal which has been moved. During the four calendar years ending with 1916, the ton-

nage of coal moved to Chicago by rail from the various coal fields was as follows:

Jan. 1 to Dec. 31—	From Ohio	From Pittsburgh	From Kentucky	From West Virginia	From Eastern W. Va. and Pa.	Total
1913.....	416,313	567,856	625,558	624,795	6,364,413	8,598,935
1914.....	324,003	201,285	760,108	486,443	4,500,159	6,271,998
1915.....	273,247	128,875	1,738,915	463,162	5,389,819	7,994,018
1916.....	285,292	52,108	2,513,403	603,741	5,941,830	9,396,374

In brief, the statistics show that the amount of coal moved to Chicago by the railways in 1916 was greater than the amount ever moved there by them in any previous year in history. It is quite true that the railways have not been able to handle all the coal or any other kind of traffic offered to them; but this has not been due to a decline in the amount of traffic handled, but to a great increase in the amount of traffic seeking to be handled. And who is really to blame if railway facilities have not been increased fast enough to meet the present demands? Those who have made it a financial impossibility for the facilities to be adequately increased.

The war crisis has made the conservation of railway equipment not only more important from the standpoint of shipper and railroad, but highly necessary to a successful mobilization of our full economic and military strength. The recent period of car shortage, resulting from a greatly increased traffic trace-

Car Conservation a Patriotic Duty

able to the needs of Europe, led to concerted efforts on the part of all interested to increase the available car supply by such measures as heavier loading, higher demurrage rates, revised car service rules and more expeditious handling of equipment by both carrier and shipper. From time to time articles have been published in the *Railway Age Gazette*, recording new records in car loading by shippers alive to the situation. A notable example of capacity loading was the shipment of a car of lumber over the Union Pacific Lines from Tacoma, Wash., to Colorado Springs, Colo., referred to in the issue of May 25. This car, a photograph of which was published in our issue for May 25, page 1106, contained

The Record Regarding Coal Shipments

During the four calendar years ending with 1916, the ton-

60,973 ft. b. m. of lumber and weighed 154,000 lb., taking full advantage of the rule permitting cars to be loaded 10 per cent above their marked capacity. That the shipping public is fully cognizant of its patriotic duty in the present emergency was indicated by the recent meeting at Washington of the executive committee of the National Industrial Traffic League with the special committee on National Defense of the American Railway Association for the purpose of considering what further economies in car supply might be achieved by co-operative efforts on the part of the League and the railroads. Next to the army and navy the transportation system is probably the most important element in the prosecution of a war. Just as a military organization is ineffective if it has insufficient men, our railroads are crippled without enough cars. It is the patriotic duty of all, therefore, to make the cars available render the maximum amount of service.

THE RAILWAY ASSOCIATIONS IN WAR

IN the conduct of railway transportation in time of peace the various associations of railway men have proven of inestimable value in the perfection and unification of practice and in the dissemination of ideas, a fact that has had definite recognition by railway managements. The present crisis calls for the persistent and untiring efforts of all officers and employees of American railroads. It also demands a full knowledge of the special conditions now obtaining as well as a familiarity with the most efficient methods for overcoming each obstacle as it is encountered. In the face of this situation the railway associations can be of no less assistance than in normal times. Many of these organizations have passed resolutions within recent months offering their services to the United States Government, but a great many of these societies comprise groups of men of highly specialized training and experience and it is to be questioned whether the government is in the possession of facts which will enable it to make intelligent demands on these organizations in reply to such resolutions, barring perhaps, the selection of prominent members for service upon advisory boards, commissions, etc. In consequence it falls upon the societies themselves or their boards of direction to study and determine how they can be of greatest service to the country.

There has been a tendency in recent weeks to assume that the state of war necessitates an entire cessation of all such organized activities, that the members must act in their individual capacities in such full measure that all collective activities are necessarily excluded. The critical situation immediately following the declaration of war and incident to the initial preparation may justify such an attitude. However, it is now conceded that the war is not a matter of weeks or even months and calls for an adjustment whereby it is to all purposes a normal condition under which action cannot continue to be entirely emergent, at least insofar as it concerns the conduct of affairs in this country.

The war will not alter the nature of railway transportation but will serve to intensify it and increase the obstacles to be overcome. Labor and materials will be scarcer and more expensive. Deliveries will be slow in the face of the most urgent demands for repairs and improvements. In consequence methods and devices for the saving of labor will be in particular demand. There will also be a great need for the reclamation of all materials released from old structures or equipment since many cannot be had new at any cost. Rails and steel bridges will have to be carried over as long as possible and every effort will need to be made to substitute available material for such as are prohibitive either as to price or delivery.

These are problems entirely aside from such special projects as the construction, operation and maintenance of railways for American troops in France or even matters con-

cerning the unification of American railways for their efficient conduct during the war, which is now enlisting the efforts of a great many American railway men. It is in handling these other matters of every day concern in which all railway men are interested, that the various associations of operating, mechanical and engineering officers can be of the greatest benefit to the railways at this time. There is, therefore, every incentive for these societies to continue their activities, first of all by assigning to committees the study of problems with which their members are being confronted today. Whether the activities of the societies are to be limited to reports by committees to the exclusion of conventions can be settled as the occasions arise. Certainly benefits will accrue to the country by the continued work of these associations in some form or another.

LOCOMOTIVE TESTING PLANTS AND THE FUEL BILL

TO the mechanical engineer interested in locomotive design or to the motive power department engineer interested in the operation of locomotives, the detailed figures on another page of tests made on the Pennsylvania Railroad locomotive testing plant, are valuable as giving accurate information regarding the effect of running conditions. The information given and the comparison afforded between the Mikado and the Consolidation types deserve careful study from the engineering standpoint. On the other hand the executive officer concerned with the broader questions involved in the choice of design may note these articles with advantage as showing how potent an instrument the locomotive testing plant is for analyzing the characteristics of a design, and for ascertaining the efficiency and capabilities of any given locomotive.

Under the present conditions of our coal supply economy in consumption is of high importance and more than ever before will he deserve well of his country who can make nine lumps of coal do what ten did before. The railroads, many of them with coal bills running well into the millions of dollars, have a duty in this matter, not only to their stockholders but to the country at large. Before establishing a type to which a considerable number of locomotives are to be built, the design should receive careful and sufficient study so that efficiency may be built into it. Then when the first locomotive is built it should be subjected to a rigorous test to make sure that the economy aimed at has been secured.

In all engineering work, the essential foundation for efficiency is a basis of facts, and in locomotive engineering there is no way of so readily obtaining the full and complete facts regarding the performance of a given design as on the testing plant. It is true that road tests with a dynamometer car afford a means of measuring to a certain extent the efficiency of a given type of locomotive, but such tests are more difficult to carry out and can never have the authority of results from a testing plant.

We do not advocate the construction of locomotive testing plants by each important railroad. There are in this country testing plants at Purdue (Purdue University) and at Urbana (University of Illinois) which, so far as recently published reports are concerned, are doing very much less practical work than should be expected of them. It should be possible to make some arrangement by which the railroads could take advantage of these semi-idle plants to ascertain the efficiency of the locomotive types now in service, and to try out new designs as they become necessary. On the testing plant each newly designed locomotive should be made to show not only that it will deliver more power than its predecessor, but that the extra power is delivered without undue sacrifice of efficiency in coal consumption.

No reputable railroad buys the component materials of which its locomotives are constructed without making suffi-

cient tests to ensure these materials being of a quality to give efficient service, and yet very few roads are in a position to know the exact efficiency with which the completed locomotive, as a whole, does its work. Can a railroad afford to spend millions of dollars a year for fuel without checking by the most accurate means available the efficiency of the locomotives which determine this expenditure?

EXPENSES CLIMBING, NET EARNINGS DROPPING

IN the first three months of the calendar year 1917, which are now also the first three months of the fiscal year, railway operating revenues increased 8.1 per cent, operating expenses increased 15.5 per cent, taxes increased 12.1 per cent and operating income decreased 11.9 per cent, as compared with the corresponding months of the preceding year. In other words, although the railways handled over \$36,500,000 more freight business and over \$27,500,000 more passenger business in the first three months of this year than in the corresponding quarter of 1916, the expenses of operation and taxes increased to such an extent that net operating income fell off nearly \$25,000,000.

Since the year 1913 was the last one of good business for the railways when conditions were normal, comparison of the results of the first quarter of that calendar year with those of the corresponding periods of 1916 and 1917 are instructive.

From 1913 to 1916 (considering the months of January, February, and March only) operating revenues increased \$108,500,000, or 15.5 per cent; operating expenses, \$35,800,000, or 6.8 per cent; taxes, \$6,000,000, or 19.7 per cent. The comparatively small increase in operating expenses was reflected in the gain in net operating income which showed an increase of \$62,000,000, or 41.1 per cent, compared with 1913.

In the first three months of 1917, the abnormal increase in operating expenses and taxes was showing its influence. Operating revenues had increased \$180,400,000, or 25.8 per cent over the same period of 1913; operating expenses, \$127,400,000, or 24.3 per cent; taxes, \$11,225,000, or 36.5 per cent, leaving an increase in net operating income over 1913 of \$37,380,000, or 24.6 per cent, as compared with \$62,000,000, or 41 per cent in 1916. Of course, since 1913 there has been a large increase in the investment in the properties on which a return should be earned.

In the first quarter of 1913 operating expenses and taxes consumed 79.30 per cent of total operating revenue; or, stated in another way, out of every dollar earned by the railways there was left for the payment of interest and dividends and for improvements in their properties a little less than 21 cents. In the first three months of 1916 expenses and taxes consumed less than 74 cents out of each dollar of earnings, leaving to the railways a fraction over 26 cents out of every dollar earned. In the first quarter of 1917, though earnings were so great as never to have been exceeded except in October, November and December, 1916, the increase in expenses and taxes was so great that they consumed 79 cents out of each dollar of revenue, leaving to the railways out of each dollar earned only 21 cents, thus getting net operating income back relatively to where it was before the coming of the war and the abnormal increase of business. And the tendency of expenses and taxes to increase faster than earnings is being daily accelerated.

Furthermore, the relationship between the different classes of expenses of the railways has been less satisfactory in 1917 than it was in 1913. Money spent for conducting transportation is gone forever; while that spent for maintenance affects and may actually improve the physical condition of the property. The statistics show that there is an ominous tendency for transportation expenses to increase out

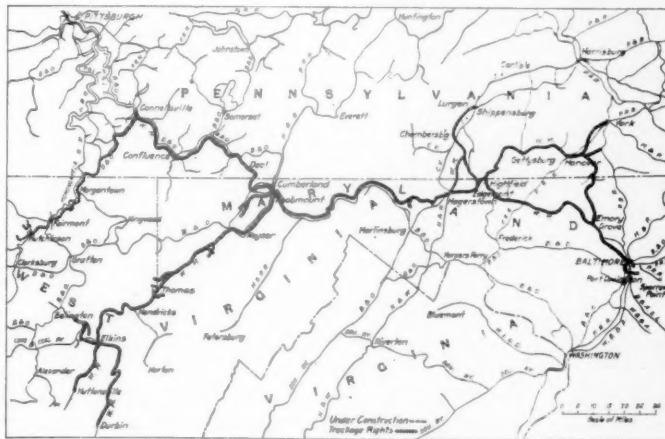
of proportion to maintenance expenses. In the first quarter of 1913, of every dollar of operating expense incurred, 53 cents was for conducting transportation. In 1916, because of the great economies in operation introduced in the lean years 1914 and 1915, this part of the total expenditure was reduced to 51¼ cents. In the first quarter of 1917, the cost of conducting transportation took almost 54 cents of every dollar of expenditure.

On the other hand, in the first quarter of 1913, 16½ cents of every dollar of operating expense was for maintenance of way and structures. In the same months of 1916 the amount was reduced to 16 cents and in 1917 to slightly less than 15 cents. In view of the great increases in the costs of labor and materials of all kinds, it is obvious that the relative reductions in expenditures for maintenance of way meant a large amount of maintenance deferred.

Present conditions make it imperative that maintenance expenses that have been deferred be met, and that the properties be even better maintained in the future than they have been in the past. The record of the first three months of 1917 indicates that these things can only be done by means of increases in revenues sufficient to leave a larger fraction of the operating-expense dollar to cover maintenance as well as to meet those expenses that cannot, even temporarily, be avoided.

WESTERN MARYLAND

EVEN before 1916 the new management of the Western Maryland had demonstrated conclusively its ability to operate the property economically; but to earn a profit for stockholders of the Western Maryland under the reorganization plan which was approved in November, 1916, it is necessary that not only shall expenses be held down to a comparatively low percentage of gross, but that gross earnings must be very considerably increased. In the calendar year 1916 the success of the efforts of the management to secure greater merchandise freight is already beginning to be evident, while up to the end of 1916 the steps that have



The Western Maryland

been taken to secure a very much larger tonnage of coal had not begun to show in the Western Maryland's earnings.

The tonnage of bituminous coal carried by the Western Maryland in 1916 was 8,654,000 as against 8,874,000 tons carried in 1915. The tonnage of all commodities, however, including coal, was 16,024,000 in 1916 as against 14,442,000 in 1915. Total operating revenues of the company amounted to \$11,968,000, an increase of \$2,079,000 over 1915, and had the reorganization been in effect during the year there would have been \$1,684,000 net income available for dividends. This would have been the full 7 per cent

on the new first preferred, with a surplus over of more than \$400,000.

Recently some of the daily newspapers have commented on the possibility of the revival of the project for an Atlantic to Pacific system of railroads under common control. This was the project which George Gould failed to carry through, but the roads which were to have formed this truly transcontinental system under Gould control have most of them passed to the control of the Rockefellers and Kuhn, Loeb & Co. The Rockefellers control the Western Maryland, which now has a traffic agreement with the Pittsburgh & Lake Erie which might be interpreted as getting it into Pittsburgh. It is possible that the Rockefellers have a large interest in or control the Wheeling & Lake Erie and the Pittsburgh & West Virginia, that was formerly the Wabash-Pittsburgh Terminal. The Wabash is controlled by Kuhn, Loeb & Co., as is also the Missouri Pacific. The Denver & Rio Grande is still controlled by the Goulds, but owing to its guarantee of Western Pacific securities, it is conceivable that the Goulds might lose this. However interesting the conjectures may be as to what effect it would have on the Western Maryland if it were to become the eastern outlet of a transcontinental system, they are only speculations looking a long way into the future. The immediately important developments which are taking place and which will affect the value of Western Maryland stock are the development of merchandise and freight other than coal traffic and the opening of new coal properties to the Western Maryland.

The developments at Port Covington (Baltimore) are very important. The Western Maryland has built an immense grain elevator here and has secured access to various manufacturing plants, including fertilizer and other manufacturing companies operated by Standard Oil interests. During 1916 track facilities were built to the United States Asphalt & Refining Company and to the Prudential Oil Company's plant; additions were made to the grain elevator at Port Covington and to storage and train tracks. Although the additional facilities of the grain elevator were not put in operation until September, 1916, during the year 1916 33,596,000 bushels of grain were received and 283 vessels were loaded with grain. The Western Maryland hauled 844,000 tons of grain in 1916 as against 114,000 tons in 1915. The total tonnage of manufactures in 1916 was 2,492,000 as against 1,927,000 in 1915.

It has only been since the close of the calendar year that coal shipments from the Consolidation Coal Company's mines in Somerset county and in the Helen's Run field, Fairmont district, W. Va., began to move over the Western Maryland. As will be seen from the map, the Western Maryland has secured trackage rights over the Baltimore & Ohio which give it access to the mines in the neighborhood of Fairmont, Binghamton, Carolina, etc., W. Va.

As a further step in securing traffic other than coal it has been said unofficially recently that interests allied with the Western Maryland have secured an option on or actual control of a connection between Baltimore and Washington. An entrance into Washington would give the Western Maryland a chance at a share of business which moves to and from the South through this gateway.

Statistics of operation are in the nature of a progress report of the remarkably good results which the management is obtaining in the economical operation of the property. The Western Maryland receives a ton-mile rate of in the neighborhood of 5 mills. In 1916 it was 5.09 mills, and in 1915, 4.98 mills. The operating ratio in 1916 was 62.80, and in 1915, 67.28, and the ratio of transportation expenses to total operating revenues was 31.03 in 1916 and 32.71 in 1915. Ton mileage of revenue freight amounted to 1,989,000 in 1916 as against 1,714,000 in 1915. The average revenue trainload in 1916 was 850 tons, an increase of 38 tons over the average for 1915, and the trainload, including company

freight, was 892 tons, an increase over the corresponding figure for 1915 of 42 tons. The average loading of revenue freight per loaded car was 34.44 in 1916 and 34.62 in 1915. The average number of loaded cars per train in 1916 was 24.67, and in 1915, 23.45, and the average number of empty cars per train was 16.23 in 1916 and 17.43 in 1915. As will be seen from the table at the end of these remarks, maintenance expenses, both for way and equipment, increased on account of the higher cost of materials and of labor, and maintenance of equipment expenses were also increased by the fact that 266 freight cars, 11 passenger cars and 22 locomotives were scrapped during the year, and that portion of their original cost not covered by accrued depreciation and which amounted to \$109,000 was charged to operating expenses.

The following table shows the principal figures for operation in the calendar year 1916 as compared with 1915:

	1916	1915
Mileage operated	773	664
Freight revenue	\$10,123,163	\$8,527,089
Passenger revenue	1,032,983	922,322
Total operating revenue	11,967,982	9,888,600
Maintenance of way and structures	1,326,472	1,228,813
Maintenance of equipment	1,823,219	1,646,662
Traffic expenses	264,453	264,518
Transportation expenses	3,713,338	3,234,710
General expenses	264,415	229,231
Total operating expenses	7,516,222	6,653,358
Taxes	405,540	321,000
Operating income	4,046,530	2,911,794
Gross income	4,272,462	3,203,293
Net* income	1,319,060	107,507†

*For both 1916 and 1915 deductions from gross income are in accordance with the financial structure of the old company and include interest on notes which were in default and interest on the defaulted interest, a total amount of \$1,683,863 for 1916 and a somewhat less amount for 1915.
†Deficit.

HOCKING VALLEY

IN its ownership of the majority stock of the Hocking Valley, the Chesapeake & Ohio has a valuable asset which is sometimes lost sight of in discussing the equities back of Chesapeake & Ohio stock. In the calendar year ended December 31, 1916, the Hocking Valley earned net available for dividends of \$1,376,000, which is equivalent to 12.5 per cent on its outstanding \$11,000,000 stock; the Chesapeake & Ohio owns a little more than two-thirds of this stock. The Hocking Valley only paid 4 per cent dividends in 1916, and the rest of its net, amounting to \$936,000, was put into the property either in the form of additions and betterments or other assets. The Hocking Valley has pursued a very conservative dividend policy ever since the Chesapeake & Ohio bought control of it. One reason for this has been that because of suits and of state regulations and laws, and because of unprofitable investment in coal properties by former managements, the Hocking Valley has had to take up through its profit and loss account a series of rather heavy losses. Thus in the calendar year 1916 there was a total of \$660,000 old accounts written off through profit and loss, and in the fiscal year ended June 30, 1915, \$1,765,000 written off, and in the fiscal year ended June 30, 1914, \$160,000 written off. Very considerable amounts have been put into additions and betterments to the physical property of the Hocking Valley since the Chesapeake & Ohio bought it. In the calendar year 1916 there was \$353,000 net spent for additions and betterments, exclusive of equipment, and \$451,000 was spent for new equipment. The net charge to equipment was but \$48,000, however, because of the retirement of old equipment. In the fiscal year ended June 30, 1915, \$900,000 was spent for equipment, the net charge being \$832,000. In the fiscal year ended June 30, 1914, a net amount totaling \$1,122,000 was spent for additions and betterments, exclusive of equipment, the greater part of which was for docks at Toledo and terminal yards, and \$2,055,000 was spent for equipment, the net charge being \$1,844,000.

The Hocking Valley operates 350 miles of road running from Pomeroy, Pt. Pleasant and Gallipolis in Ohio, through

the coal fields lying near Logan, Ohio, through Columbus to Toledo. The road is double track from Logan to Hookers and from Valley Crossing south of Columbus to Ackerman north of Columbus. The rest of the road is single track. In other words, it is a single track coal road, with some miles of double track leading out from the coal fields and a few miles of double track each side of Columbus, with a little double track also leading to Toledo. At Pt. Pleasant, the Hocking Valley connects with the Kanawha & Michigan, which in turn connects with the Chesapeake & Ohio main line at Charleston, W. Va. Formerly the Kanawha & Michigan was controlled jointly by the New York Central and the Chesapeake & Ohio, but previous to the calendar year 1916, the Chesapeake & Ohio sold its interest in the Kanawha & Michigan to the New York Central.

The Chesapeake & Ohio bought the majority stock of the Hocking Valley presumably for two reasons. One was to give the Chesapeake & Ohio coal an outlet of its own to the Great Lakes, and the other, because the Hocking Valley as an investment appeared to be a good purchase. As an outlet for the Chesapeake & Ohio's coal comparatively little advantage has been derived by the Chesapeake & Ohio as yet. Coal from the mines south of Charleston destined for Toledo via the Kanawha & Michigan and Hocking Valley gave such a small proportion of the total rate to the Chesapeake & Ohio that it was actually in very many cases unprofitable to handle. The Chesapeake & Ohio has now built a short line, called the Chesapeake & Ohio Northern, from Limeville, Ky., almost due north to Waverly, Ohio, where a connection is made with the Norfolk & Western over which trackage rights have been obtained to Valley Crossing, where the double track of the Hocking Valley into Columbus begins. The total rate, of course, for coal from the fields south of Charleston is the same whether sent via the Kanawha & Michigan and Hocking Valley or Chesapeake & Ohio Northern and Hocking Valley, but the proportion of this total rate which the Chesapeake & Ohio obtains is large enough, when the route is via the Chesapeake & Ohio Northern, to be profitable, and when it is via the Kanawha & Michigan it is so small as to be unprofitable.

From the foregoing it will be seen that in a general way the Chesapeake & Ohio has not previously derived the full benefits which might have been expected to accrue from its purchase of the majority stock of the Hocking Valley either as regards obtaining an outlet to the lakes for coal or in regard to obtaining an investment earning and paying a quite profitable return on the purchase price. Now with the completion of the Chesapeake & Ohio Northern, one at least of these objects of the purchase of the Hocking Valley should be obtained by the Chesapeake & Ohio, and it ought to be only a matter of a comparatively short time until all of the losses through former investments in coal mines, etc., will have been written off and the Hocking Valley can start either paying larger dividends or building up a valuable equity through the investment of surplus.

At the end of 1916 there were only \$793,000 loans and bills payable and the company had on hand \$1,049,000 cash. In the calendar year 1916 total operating revenues amounted to \$8,200,000, an increase over the previous year of 27 per cent, and operating expenses amounted to \$5,598,000, an increase of 37 per cent. Far in a way the largest part of this increase in expenses is accounted for by expenditures on maintenance of equipment, which expenditures were nearly twice as great in 1916 as in 1915. Total maintenance of equipment expenditures in 1916 amounted to \$2,156,000, or \$993,000 more than was spent in 1915. Apparently in 1915 repairs of freight cars were held down to a very low figure and in 1916 freight cars were put through the shops on a large scale and given a thorough overhauling. In 1916 the average amount spent for repairs per freight train car in service was \$84, as against an average of \$33 spent in 1915.

Freight business in 1916 on the Hocking Valley showed a very large increase as compared with 1915. Revenue ton mileage of all freight totaled 1,644,000,000, an increase of 31 per cent. This was handled with an increase of only 17.5 per cent in freight train mileage. The revenue trainload was 1,204 tons, an increase of 11.6 per cent over 1915, and the revenue tonnage per loaded car was 40 tons, an increase of 5.8 per cent. Ton mileage of revenue freight per mile of road on the Hocking Valley in 1916 was 4,695,000. This is an immensely heavy freight traffic for a single track line and it is an achievement to have handled this volume of traffic which, as previously mentioned, was 31 per cent. greater than the traffic in 1915, with an increase of only 18.6 per cent in transportation expenses. Total transportation expenses in 1916 amounted to \$2,364,000.

The following table shows the principal figures for operation for the calendar year 1916, compared with 1915:

	1916.	1915.
Average mileage operated.....	350	351
Freight revenue.....	\$6,681,262	\$5,149,842
Passenger revenue.....	917,935	820,291
Total operating revenue.....	8,200,420	6,441,445
Maintenance of way and structures.....	787,949	636,189
Maintenance of equipment.....	2,156,129	1,163,317
Traffic expenses.....	101,989	103,551
Transportation expenses.....	2,364,020	1,993,735
General expenses.....	187,802	174,588
Total operating expenses.....	5,597,889	4,072,863
Taxes.....	590,470	410,122
Operating income.....	2,011,438	1,957,409
Gross income.....	2,588,415	2,102,806
Net income.....	1,376,127	752,374
Dividends.....	439,980	439,980
Surplus.....	936,147	312,394

NEW BOOKS

Tables for Computing the Compensation of Railway Employees Under the Eight-hour Law. By Alfred Petterson, head timekeeper, Atchison, Topeka & Santa Fe, Chanute, Kan. Two tables. Bound in paper. Published by Alfred Petterson, Chanute, Kan. Price \$0.25.

For the purpose of aiding timekeepers in computing overtime for engineers and trainmen under the eight-hour law, should it go into effect, the author has prepared two tables on the basis of an average speed of 12½ miles per hour, and an eight-hour wage day, showing in one the number of miles to be allowed for any time worked, and in the other the number of hours and minutes to be allowed for a run of any number of miles.

Government Partnership in Railroads. By Mark Wymond. 192 pages, 5½ in. x 8 in. Bound in buckram. Published by Wymond & Clark, Chicago. Price, \$1.50.

This book contains a concise summary of the transportation problem in the United States, a review of what the author terms the sins of regulation and the sins of the railroads, a recitation of the failure of government ownership of railroads from an economic point of view and the exposition of a policy which the author proposes as a solution of the problem. Mr. Wymond brands the present system of regulating railroads through 93 independent bodies as fundamentally wrong and suggests as a remedy the expansion of the Interstate Commerce Commission by the creation of eight district commissions subsidiary to the commission in Washington to handle the work now in the hands of the rate regulating bodies of the individual states. He suggests that each commission be composed of representatives of various interests concerned with rates, i. e., agricultural shippers, industrial and commercial shippers, railroad labor, railroad administration, the professions of law, engineering and finance. Appointments are to be made by a president with long tenure of office to relieve commissioners from local political pressure. As the government controls railroad revenue and operating expenditure to a great extent, he believes that it should be responsible for the financial results of operation. The government therefore should guarantee the interest on railroad investments, a plan which would give the railroads financial stability and enable them to obtain needed credit for expansion.

Letters to the Editor

A DUTY OF CONSCRIPTION OFFICERS

WARREN, Ark.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

It would seem to me that, during the war, the penalties for failure of railroads to comply with full crew laws should be suspended, for the reason that if conscription officers do their duty they will draft the third brakeman of all through freight trains as fast as they find them, making it almost impossible for the railroads to obey the law.

W. S. HOBBS.

BIFF! BANG!

TOPEKA, Kansas.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Referring to the last sentence of Mr. Patenall's letter published in the *Railway Age Gazette* of May 11, it is a curious fact that railroads using the system advocated by him are those having collisions which will eventually force us to automatic train control. It is also a curious fact that a railroad which under Mr. Patenall's ideas had a number of bad collisions has had none since adopting Mr. Clausen's conceptions about the caution indication.

THOS. S. STEVENS,

Signal Engineer, Atchison, Topeka & Santa Fe System.

(EDITOR'S NOTE.—Mr. Clausen stated the case for the affirmative, Mr. Patenall replied for the negative, and Mr. Stevens presents the rebuttal. Both sides having been heard we feel it imperative to close the discussion in these columns before it attains any more of the heat which has characterized previous encounters on this bitterly contested ground of "standard signal indications.")

PREPARING FOR PROMOTION

CINCINNATI, Ohio.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Continuing in the line of thought brought out in the "Preparing for Promotion" letter published January 12, the railroad employee's question "Why don't they promote me?" might well be changed to "How can I prepare myself to assume responsibility?"

How many of the questioners have decided that they should know how to write a good, clear business letter, giving essentials only and treating the subject forcefully but briefly, and then have sought to learn?

How many of these read any business magazines, such as "System," in which are considered methods of handling men, filing systems and business etiquette? A railroad is not entirely a law unto itself; common business principles apply to it. Economic changes are being made all the time, not to satisfy a whim of some officer, but to secure savings and improved methods. To appreciate the value of such things one must understand that "that man is most original who is able to adapt from the greatest number of sources."

There are few employees who could come within a mile of defining the policy of their company in dealing with the public. Granting that it is exemplified by the Golden Rule, the only kind of policy that can ever survive, fewer still have learned to be a disciple and to explain this policy to a semi-antagonistic public at every available opportunity.

In this day of keen competition no company can afford the losses that would result from training a man for a position after he has been promoted to it. Every employee should adopt Abraham Lincoln's resolution, "I will study and prepare myself, for some day my chance will come." This does

not mean that because some employees have prepared themselves by a college course it is unnecessary for them to prepare for promotion. Promotion is a recognition of ability, which is largely the result of that preparation which is coincident with actual work.

ASST. ON ENGR. CORPS.

CAREFUL COLLECTION OF DEMURRAGE

WICHITA, Kansas.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

As a result of the recent conferences we are now able, in the State of Kansas, to charge a higher rate of demurrage on both interstate and intrastate shipments. It seems to me that it is now up to the individual railroads to bring results by enforcing the new rates to the letter. It would surprise the operating officers if they would make a close check of some of their smaller stations for a period of 30 or 60 days and were to note the amount of money which is allowed to get away on account of agents failing to assess the proper amount of demurrage.

The agent is tempted to be a good fellow with the shippers; and he often fails to keep posted on tariff changes. I have found agents at small stations who will make excuses of cars being off spot, bad roads, unable to locate consignee and even set up dates on their reports, in order to avoid assessing demurrage. In the majority of these cases, if run down, it will be found that there is no foundation for the excuse offered. Such agents should be forced to make the proper collection, and the next car will be handled more promptly.

The demurrage rules are very lenient and make exception for bad weather, bad roads, etc., and there are few occasions where a shipper or consignee need pay demurrage if he makes a reasonable effort to load or unload his car.

Some agents seem not to understand that the higher demurrage rate was not made for the express purpose of increasing revenue, but to obtain more prompt release of cars; and that they are defeating the purpose and intent of the rules when they assist shippers to avoid the payment of these penalties.

A certain miller held the railroad company's cars containing grain for periods of 10 to 30 days and at the same time made bitter complaint of conditions, threatening to bring suit on account of cars not being furnished for flour. This mill would eventually release these cars and load them out with flour, after they had been delayed in many cases long enough for the cars to have hauled several loads. The real trouble was that they had no room for storage and did not think there was anything out of the way in utilizing the freight car for storage.

This is the class of shipper which makes the most complaints about car shortage; but this class is the one which is now building warehouses or making other provision for the quick release of cars. The new rates should cure much bad practice. When a car is delayed for a period of 30 days, instead of paying \$20 to \$25 for storage, they will now pay \$80 to \$105 on an intrastate shipment, and \$91 to \$116 on interstate. From experience on a division where a great many such delays were formerly suffered, I have found that very seldom is a car of grain held for disposition until it reaches the five-dollar-a-day class, which goes to show that if the railroads will follow up the matter of collecting demurrage on every car for every day due, they will bring about a great reduction in the detention of cars.

J. A. DIETRICK.

INCREASE FOR IRISH RAILWAY WORKERS.—The Irish railway executive, at Dublin, recently arrived at a settlement of the Irish railway workers' demands. It was decided to grant an all-round increase of 5s. (\$1.20) weekly as a war bonus, to operate from April 9. The settlement applies to all workers on the same basis as that reached in the case of the English railway workers.



The Completed Bridge

The New Burlington Bridge at Kansas City

Double Deck Spans on Slightly Modified Location Replace the Old Hannibal Structure Completed in 1869

ON April 6, double-track operation was inaugurated on a new bridge over the Missouri river at Kansas City, Mo., which replaces the old Hannibal bridge, on the line of the Chicago, Burlington & Quincy, between Kansas City and St. Joseph, Chicago and St. Louis. The new draw span was swung to pass the first river steamer on March 29. The new bridge is double-tracked and has two decks; a highway deck being carried above the railroad tracks. It replaces a single track bridge which handled highway traffic on the same level as the railroad, necessitating gates and signals at each end to control the alternate use by trains and highway traffic.

The new bridge consists, from north to south, of one 75-ft. deck girder span, two 330-ft. truss spans, one 450-ft. draw span, one 120-ft. deck girder span, one 90-ft. through girder span and one 65-ft. through girder span. The project involved a change of location, which provides an improved alignment, crossing the river at right angles to establish harbor lines and eliminating a long approach trestle. The highway deck on the new bridge is 20 ft. wide and is paved with creosoted blocks.

The substructure consists of five pneumatic piers built by contract, and three piers, one abutment, and one 13-ft. by 18-ft. concrete box subway built by the railroad forces. All exposed concrete surfaces were bush-hammered. Piers 1, 2, 3, 4 and 5 were sunk by the pneumatic process. Pier 1 measures 20 ft. by 60 ft. at the cutting edge, piers 2, 3 and 5 are 24 ft. by 66 ft and pier 4, the pivot pier, is octagonal in shape, 45 ft. face to face. The network of the piers was shaped in the usual manner, with rounded down-stream ends and starling up-stream ends.

Three highway pedestals were provided on the south side for the highway approach. These were landed on bed rock, which was found only a few feet below the surface. On the north shore the highway approach consists of eight concrete pedestals, which were founded on wooden piling driven to a depth of 30 ft., the tops of which were below low water stage. These bases are 11½ ft. square at the bottom and 4 ft. square on top. They rest on 9 piles each and were finished to a height of about 20 ft. above the ground surface.

The north approach fill is 2,000 ft. long and is built for double track on a 0.52 per cent grade. The fill contains about 100,000 cu. yd. of material and was placed by a dredge in the river, pumping sand through a 15-in. pipe, except for a small amount placed on top by train. The highway approach on this side required 32,000 cu. yd. of filling, most of which was placed in a similar manner.

OLD BRIDGE OF HISTORIC INTEREST

The old structure was the first bridge over the Missouri river at Kansas City and was constructed by the Kansas City & Cameron railroad under the direction of Octave Chanute as chief engineer in charge of construction. The Kansas City & Cameron was chartered in 1857 and construction was begun in 1860, but was suspended by the Civil War. Work was resumed in 1866 and was completed when the bridge was opened for traffic July 3, 1869.

It was necessary to tear down the two south piers of this old bridge to make way for new ones and in one of these a small copper box was found containing data put there in a dedication service August 21, 1867. This box contained numerous United States coins of various denominations, names of officers and artisans employed in the bridge construction, officers and directors of the railroad, and city officers of Kansas City for 1867, also several newspapers of that date, together with other data concerning the building of the bridge. Many of these records were illegible owing to moisture which had collected in the box. The original superstructure was replaced in 1886 and 1887 and the piers were reinforced by steel rails fitted horizontally around them as bands.

CONCRETE CONSTRUCTION

The caissons were of the usual pattern, consisting of two thicknesses of 12-in. by 12-in. timbers set on a steel cutting edge, the outer course being laid horizontal, and the inner course vertical and sheeted on the outside with 3-in. by 10-in. timbers placed vertical. Each caisson was equipped with one man shaft, two material shafts, three to four 4-in. blow pipes, and the necessary air and water pipes as well as tele-

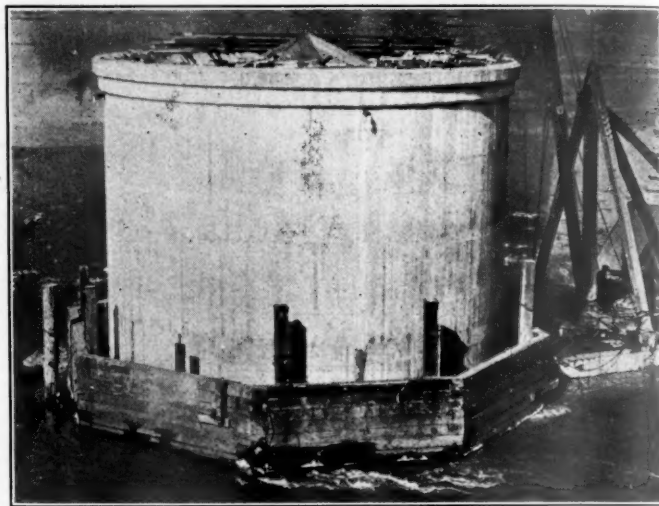
phones connecting with the powerhouse and derrick hoists.

All piers were connected by a temporary tramway, on which were laid three tracks for operating concrete cars to and from each pier and a running track for the use of a locomotive crane, etc. To reach pier 5 with the tramway it was necessary to cross the main river channel, necessitating the building of a jackknife lift span 80 ft. long. This span was constructed in two halves, each part being supported by cables connecting with towers at each end and so arranged that each part could be lifted to permit the passage of river boats when necessary. Gauntlet tracks were laid over this span.

The concrete plant was located on the north shore and consisted of a 20-ft. by 20-ft. gravel storage bin, holding 300 cu. yd., elevated on piling over a one cubic yard Ransome mixer. The plant was elevated sufficiently to permit spouting into concrete cars. Gravel was dumped from cars on an elevated track to a hopper bin and was hoisted and dumped in the top of the storage bin by an endless bucket hoist. It was then let into the mixer hopper by gravity, and cement from the cement house adjoining was conveyed to the mixer hopper by a small steel car operating on an incline, the car being automatically dumped and returned by gravity. All machinery was operated by a steam plant adjoining.

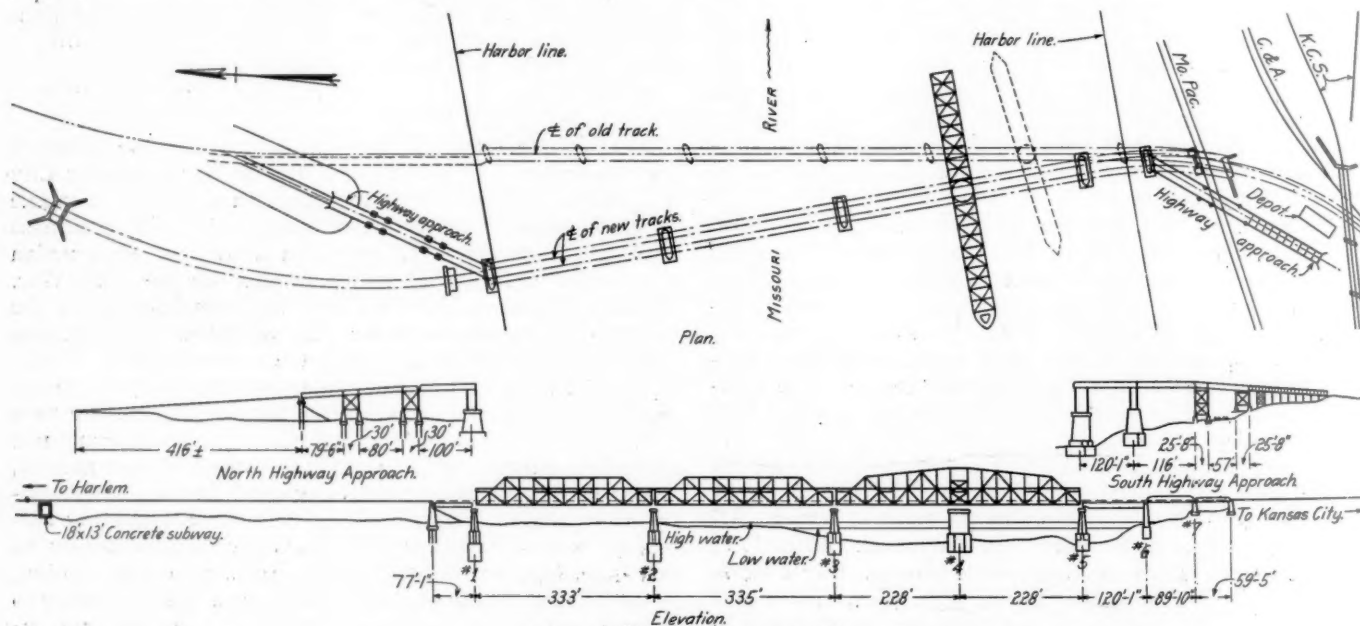
All contract piers were concreted from this plant, except pier 5 located at the extreme south end of the track. This pier was only partly finished when the ice in the river broke up on January 21, 1916, and took out 600 ft. of the tramway, necessitating the use of a small concrete plant located on the south shore, from which concrete was conveyed to pier 5 on a tram track supported on the side of the old bridge. This tramway was also used to concrete piers 6, 7 and 8. The original tramway was used to carry pipe lines for air and water to the working chamber of pier 5, which was not

and an excavation was made around the entire caisson to a depth of about four feet in order to make an apron wall around the cutting edge about eight feet wide and four feet deep, thus affording secure anchorage in the rock. Pier 2 was sunk to a depth similar to pier 1 and the foundation was



The New Pivot Pier

completed on hard shale with apron walls the same as pier 1. Pier 3 was built in about 30 ft. of water, which necessitated constructing the caisson on lowering screws. When lowered into the water it floated about 9½ ft. under the surface. The box was then weighted with concrete and landed on the river bed in proper position, after which the air



Map and Profile of the Bridge

yet landed, but the accident necessitated relaying air and water lines across the river on the old bridge in order to complete the sinking at this pier. The north abutment, the highway pedestals and the subway were concreted by a small plant which was moved from place to place as the work progressed.

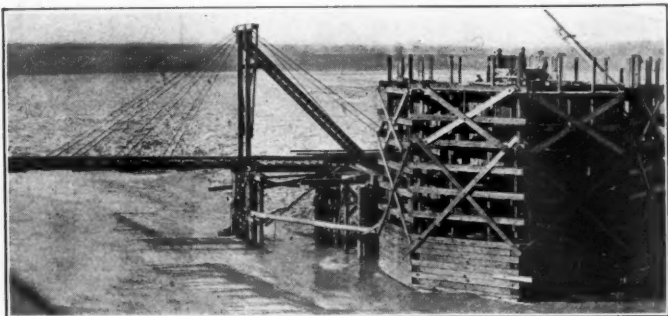
THE PNEUMATIC WORK

Pier 1, located on the north shore, was sunk to a depth of 65 ft. and founded on black shale bed rock. The cutting edges of this pier were imbedded in the rock about one foot

was applied and work was carried on in the usual manner, wet excavation being made where possible. At a depth of about 50 ft., a boulder field was encountered, some of the boulders measuring four to six feet in diameter. These were broken up and removed through the bucket locks. The cutting edge of this pier was sunk about three feet into hard shale in the bottom of the river and an apron wall constructed similar to piers 1 and 2.

Pier 4 was launched in about 40 ft. of water and the progress in sinking was similar to that at the other piers. The network of this pier measured 39 ft. in diameter and

was circular in shape, with a necessary recess in the coping at the top for the draw span machinery. The caisson for pier 5 was constructed on lowering screws alongside the draw protection for the old bridge, because running ice in the river made it dangerous to construct the dock and lowering platform at its proper location. The caisson was floated into position when construction was well advanced and at a time when the ice in the river appeared to be more solid. This necessitated cutting the ice away as the caisson was moved to position. It was necessary to rush this work to avoid the danger of breaking up the ice in the river. While



The Lift Bridge for the Tramway

excavating in this caisson it was necessary on several occasions to take the sand hogs out on account of running ice, which endangered the crib and upper works. Outside of a few scares of this kind nothing unusual occurred in the construction of this pier. Bed rock was found to be very uneven at this point and the cutting edge was sunk to a depth of about 10 ft. in the rock on one side and about 4 ft. on the other. The excavation below the cutting edge was made in a manner similar to that used at the other piers.

OPEN COFFERDAMS

Pier 6 was constructed by railroad forces and consisted of a concrete cofferdam, measuring 17 ft. wide by 57 ft. long. There were three dividing walls in this caisson, making four pockets through which excavated material was removed.



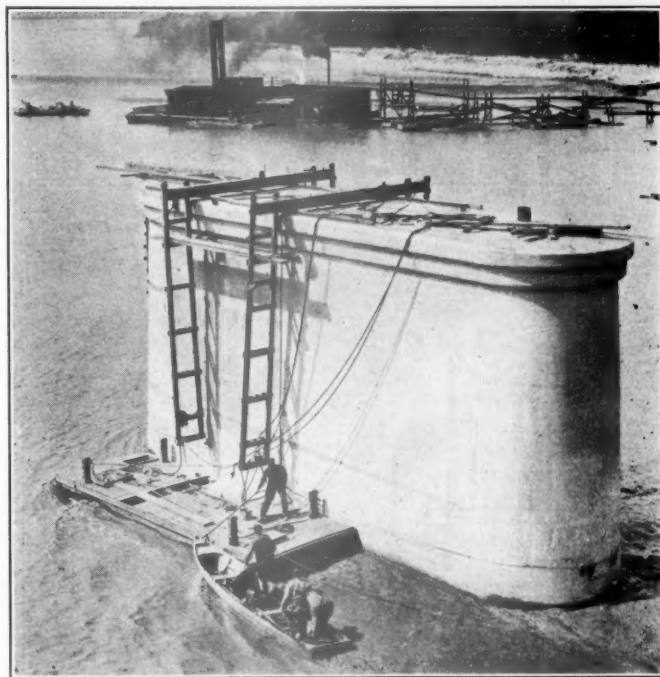
Construction Tracks for the Pneumatic Work

This was open work and by the use of a six-inch centrifugal pump it was possible to make all excavation in the dry, using picks and shovels. It was sometimes necessary to use dynamite to break up boulders and other obstructions.

This pier was located just below the city dump and all kinds of obstructions were encountered. Wire, barrel hoops, bed springs, old water tanks, brush and all kinds of material

were found during the excavation and caused more or less trouble in their removal. The pier was founded on hard shale, similar to that encountered at the other piers. The bed rock at this point was found to be comparatively level, the difference being about 18 in. in the width of the caisson. The cutting edge was sunk into this rock to an average depth of about 18 in. This caisson had an 8-in. by 12-in. fir timber for a shoe, which was fastened to it by means of bolts imbedded in the concrete. Bed rock at this point was only 27 ft. below the surface of low water.

Pier 7 was so located as to require the removal of an old stone pier, which was a part of the old bridge. This made it necessary to erect falsework on which to support one end of a 130-ft. truss span and one end of a 75-ft. through girder. This was accomplished by placing a double frame bent on each side of the pier and resting these spans on twelve 24-in. I-beams spanning the old pier location. In order to place these I-beams, it was necessary to tear out the top of the old pier and by taking out at one time only sufficient stone to permit the placing of one I-beam, this work was accomplished easily and the old pier was removed



Bush Hammering Pier No. 3

readily. Rock appeared on the surface at this point, so very little excavation was necessary, although the rock was cleaned off and excavated to get a solid bearing for the pier. This ledge consisted of lime stone and was very hard. Pier 8, which is the south pier of the bridge, was constructed in the same manner as pier 7, that is, it was necessary to remove the old pier before new work would be started. Temporary wing walls were constructed at each end of pier 8 to hold the end of the embankment.

The north abutment was founded on sixty 30-ft. wooden piles driven full length, their tops being below water mark. They were capped with five feet of concrete on which were constructed three concrete towers or pedestals which, in turn, were finished for a bridge seat and overhanging wings. The openings between towers or pedestals permit the earth embankment to run through and relieve the pressure from the fill.

All concrete for the neatwork in these piers was of a 1-2-4 mixture. The concrete in the working chambers of the pneumatic piers was also of this same mixture, while the main part of the footing course consisted of a 1-3-6 mix-

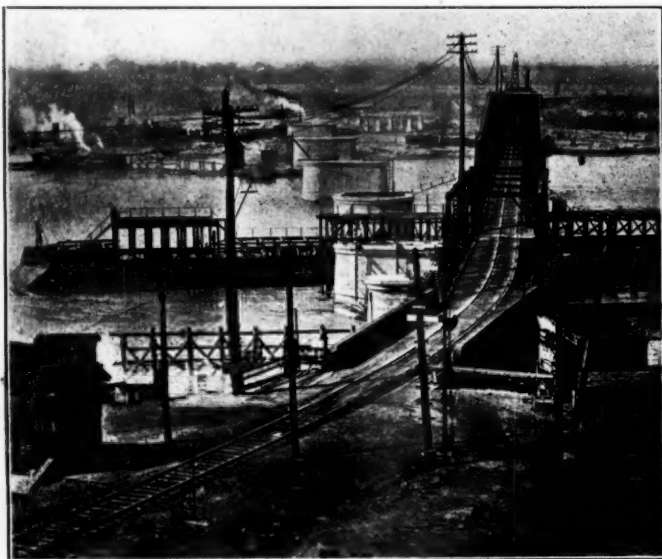
ture. Atlas Portland cement was used with bank-run gravel.

THE SUPERSTRUCTURE

The erection of the superstructure began about April 1, 1916, and most of the members were erected as received from the bridge shop so that it was not necessary to maintain a storage yard and rehandle the members when required for erection. Only a small force was employed during the summer and work was handled by easy stages so as to reach the draw span after navigation on the river had closed for the winter.

The 75-ft. deck girders between the north abutment and pier 1 were first set in place by means of a locomotive crane working on the temporary tracks under the bridge. Next the 330-ft. span between piers 1 and 2 was erected. Falsework piles were driven by a land driver and the floor system was placed by a locomotive crane from temporary tracks under the bridge. The crane was then taken to the deck of the bridge and the steel was erected in the usual manner. Most of this steel was unloaded from cars set on a temporary track under the bridge and was hoisted to its final location by the locomotive crane on the track level of the bridge. The second 330-ft. span between piers 2 and 3 was erected in much the same manner as span 1 except that the falsework piles were driven by a marine driver and all material was handled from the track on the bridge. All this work was carried on without interference with traffic on the old bridge.

The placing of the girder spans on the south end of the



The Old Bridge and the New Piers from the South End

bridge was more difficult because the old and new bridges converge to a common point at this end. First, the old 130-ft. truss span was placed on falsework, which consisted of one 40-ft. girder span between new pier 6 and the old pier at the north end of this old 130-ft. span, and a 75-ft. temporary girder span on pony bents between new pier 6 and new pier 7 at the south end of this old truss. The latter was then removed and the new through girder span was placed between piers 6 and 7. Floor beams were placed in this girder span and the falsework removed, all this work being handled under traffic without any serious delay to trains. Piers 6 and 7 are not parallel to each other, necessitating a 90-ft. and a 96-ft. girder to make this span. The 65-ft. through girder span between piers 7 and 8, over the Missouri Pacific tracks and Front street, was erected on temporary bents upstream from the old span and was rolled into place, the old girder span being rolled downstream onto falsework prepared to receive it. These changes were handled as one movement.

The north half of the draw span between piers 3 and 4 was erected on falsework. After river navigation closed falsework was placed between pier 4 (the pivot pier) and the old draw protection and the erection of the new draw span was continued. From the support on the old draw protection to pier 5, or the south end of the new draw span, erection was cantilevered to completion. The erection of the new draw span did not interfere with traffic on the old bridge. The 120-ft. deck girder spans between piers 5 and 6 interfered with the old pier at the south end of the old draw and necessitated the placing of the girders for the west track first. With this one set of girders in place, track was laid and traffic was turned over the new bridge, using the west



North End of the Bridge—Old Bridge to the Left

track only. It was then necessary to remove the old draw span and tear down a part of the old pier at its south end in order to place the girders for the east track in the 120-ft. span. The new draw span is operated by electric power obtained from the Kansas City Power & Light Company, and is interlocked with protection signals each way from the bridge. The draw protection is built of creosoted piling and timber bents and the upstream end is protected by a three-cornered concrete pier sunk to bed rock and projecting above the surface of the water about 30 ft. All steel for the highway approaches was handled and erected with a locomotive crane.

Work on the present bridge was begun in June, 1915, but was delayed by a succession of floods and extreme high water which washed out material tracks on the north shore several times. It was finally necessary to fill in the proposed site for the material yard with sand which was pumped from the river by use of an hydraulic dredge. The tracks were finally completed and work on the bridge actually begun on August 10, 1915.

The erection of steel began in April, 1916, and was all completed by January 15, 1917. It was necessary to maintain an open waterway for river traffic during the navigation season, so that the draw span over the main channel could not be erected until the river froze over. After the draw span was in place and the bridge was otherwise ready for traffic it was necessary to remove the draw span of the old bridge, and also a 200-ft. truss span and the top of one old pier in order to permit the operation of the new draw. This was accomplished before river navigation was again opened. The work of removing the old bridge is now in progress.

The Union Bridge & Construction Company, Kansas City, built five piers of the new bridge. The balance of the substructure was built by railroad forces. The superstructure was fabricated and erected by the American Bridge Company. This bridge was designed by the late C. H. Carlidge, bridge engineer of the Burlington, and the construction was carried on under his direct supervision up to the time of his death on June 14, 1916. Since that time the work has been

handled by G. A. Haggander, present bridge engineer of the Burlington. J. H. Merriam was resident engineer on the construction of the substructure.

REDUCTIONS IN PASSENGER SERVICE

During the past week several more railways have announced their plans of co-operating with the recommendation of the Executive Committee of the Special Committee of the American Railway Association calling upon all lines to readjust their passenger service with a view to conserving fuel supply and increasing capacity for moving coal, food, government materials and troops.

PENNSYLVANIA RAILROAD

George D. Dixon, vice-president in charge of traffic of the Pennsylvania Railroad, on Monday announced that the Pennsylvania will, in the near future, put into effect a general, and quite extensive, revision of its passenger train schedules. The final details are now being worked out and will be announced to the public promptly upon completion.

"At the outset," says Mr. Dixon's announcement, "we desire to emphasize the fact that the object sought is not financial economy or an increase in net revenues. In reality, a sacrifice in revenues will result. The economies which we are endeavoring to effect are physical and are being devised for the sole purpose of increasing, as much as possible, the amount of transportation service, of the most urgently necessary kinds, that can be rendered to the government and the public with the railroad plant that is at our disposal."

The remainder of the Pennsylvania's announcement follows: In brief, we are attempting two things: First, to increase immediately the movement of such freight as foodstuffs and other necessities of life; second, to clear our lines for the prompt handling of government supplies and troops, which must shortly be transported on a large scale.

As our lines, terminals and locomotives are now being used to the maximum of their capacity, the only way in which we can provide for the increased government traffic, and for the freer movement of perishable and other necessary freight, is to reduce the number of passenger train units that are being operated over the railroad. This will release both trackage and engines for other forms of service. We shall endeavor to accomplish this purpose in the following ways:

1. By consolidating passenger trains wherever practicable, thus making one train unit serve the purpose of two or more;
2. By the entire elimination, in some cases, of trains on which the patronage is very small;
3. By reducing the number of restaurant cars, and in no case operating more than one restaurant car on a train;
4. By reducing the number of parlor and sleeping cars, and by decreasing or possibly discontinuing, the use of club and observation cars.

We expect, through these means, to cut down the movement of passenger trains, on our Lines East of Pittsburgh, by a total of about 6,000 train-miles per day.

Between New York and Washington an unprecedented amount of passenger traffic is now being handled. With the present number of passenger trains it is impossible to avoid operating some of them on the freight tracks. Each train so operated monopolizes 50 miles or more of freight track during its run. If, by consolidating two passenger trains, we can remove one from the freight tracks, we shall have gained that much more line for the handling of the foodstuffs which are now so urgently, and in such enormous quantities, being pressed for shipment from the South.

Between the East and the West, we hope to consolidate certain through passenger trains, and in this way materially increase the amount of freight traffic that can be handled over the main stem of the System.

Branch line and local service will be dealt with similarly, as conditions on the various divisions require.

As far as can now be foreseen, we will be able to furnish substantially the usual summer service to seashore and other resort points, beginning July 1. This is because the lines reaching such points, for the most part, handle little freight and do not seem likely to be needed extensively, in the near future, for military purposes. Circumstances, of course, may at any time alter and necessitate a change of our plans in this regard.

There is a practical limit to the length and weight of trains which cannot be exceeded. Each restaurant car we take off can be replaced by a day coach, thus increasing by at least 80 passengers the number that can be carried in a given train. This will permit consolidation of trains in cases where otherwise the step would be impossible. In many instances passengers can, with little inconvenience to themselves, arrange to take their meals before boarding trains, or at the end of the journey.

Similar reasons exist for reducing the number of parlor cars, as they carry only about 30 passengers each, compared with nearly three times that number carried in a day coach. Club and observation cars are usually a duplication of parlor or sleeping car facilities in the same train, and can be eliminated without hardship. The number of sleepers can be reduced by making better use of upper berths.

All of these steps will mean fewer train units in the passenger service, and more locomotives and tracks for troops, government supplies and freight.

In revising the passenger train schedules upon all portions of the railroad, we are using every precaution to do so with the least possible inconvenience to the public. We believe that in no case will serious inconvenience be caused, and no necessary travel will be interfered with.

EXCURSION TRAINS TO BE ELIMINATED

The Atlantic Coast Line, the New York Central, the Baltimore & Ohio, the Pennsylvania Railroad and the Boston & Maine are among the roads that have announced that they will reduce considerably and in some cases nearly eliminate entirely, the excursion trains on their lines.

NEW ENGLAND ROADS

As announced in last week's issue, the Boston & Maine has proposed to eliminate nearly 400 trains on its summer schedules and the New Haven 199, including 157 week-day and 42 Sunday trains. The Boston & Albany announced Saturday that on June 24 it would put in effect a reduced timetable calling for the elimination of 28 week-day and 28 Sunday trains. Nearly all of the runs are suburban trains out of Boston, but their elimination will result in a reduction of about 8 per cent of the week-day mileage and 10 per cent of that on Sundays. A considerable number of trains not taken off will have to make additional stops to accommodate partly the traffic which will be inconvenienced by the abolition of other trains.

The New Haven in addition to taking off regular trains will also eliminate a large number of its special and excursion trains. It has also announced that it is readjusting its dining car menu to conform with the suggestions of the committee.

MASSACHUSETTS COMMISSION HOLDS HEARING

Representatives of the Boston & Albany, the Boston & Maine, and the New Haven appeared before the Massachusetts Public Service Commission on Monday to explain their reasons for curtailing passenger train service. The Massachusetts railroads in addition to being able to show that the reductions in service were made as a result of the recommendations of the Railroads' War Board, have also the advantage of having the sanction of the Massachusetts Committee on Public Safety.

Henry P. Endicott, executive manager of the committee said that the committee had made a thorough study of the entire question and had reached the conclusion that it was

absolutely essential that every possible facility be afforded the railroads for moving food, coal and munitions.

"I am neither a pessimist nor an alarmist," he said, "but I know this country is in a very serious position and prompt action is necessary. I have not made this statement in public before, but I feel that something must be said to awaken the public to the gravity of the situation."

Charles S. Pierce, general solicitor of the Boston & Maine, said that the proposed reduction in passenger train service would result in a saving of substantially 45,000 train miles a week, which, based on the average fuel consumption of a passenger locomotive, would mean a saving of 100,000 tons of coal a year. The establishment of a military camp at Ayer for 30,000 or 40,000 troops will be a heavy strain on the road, he said, and makes a reduction in train service almost compulsory if the railroad is to be of service to the government in the present emergency.

Others, representing traffic associations, and the Chambers of Commerce of Boston and other cities also spoke in favor of the proposed reductions in service.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., June 5, 1917.

PROPOSED RAILROAD LEGISLATION.

Senator Newlands, chairman of the Senate Committee on Interstate Commerce, has made several efforts in the Senate to secure consideration for the substitute priority bill described in last week's issue, which had been drawn by a sub-committee consisting of Senator Newlands and Senator Cummins. Unanimous consent for the consideration of the bill was withheld on May 31 by the objections of Senator Hollis and Senator Reed to the provision in the bill prohibiting interference with or obstruction of the orderly conduct of interstate commerce. Senator Hollis said the purpose was to make it a criminal offense for any body of men engaged in interstate commerce to strike and that it was opposed by the railroad brotherhoods. Senator Newlands said that the bill is not intended to prevent strikes and will not have that effect and that the committee had concluded not to enter upon any phase of strike legislation at this session.

On June 2 Senator Newlands again brought up the bill, stating that he had arrived at an understanding with Senator Hollis and he accepted an amendment proposed by the latter, providing that nothing in the bill shall be construed to repeal, modify or affect section 6 or section 20 of the Clayton law. Section 6 exempts labor organizations from the operation of the anti-trust law and section 20 prohibits the issuance of injunctions in labor disputes. Senator Cummins also proposed an amendment which was accepted by the chairman of the committee for the purpose of clarifying the language in one or two places, but without materially changing the effect. Senator Newlands succeeded in having this bill made the unfinished business of the Senate and it was again taken up on June 4, but was blocked by Senator Smith of Georgia, who demanded that it be given very careful consideration. He said it was inconceivable to him that the Senate would pass such a bill; that it would transfer to the President the entire control of the transportation system of the country. He did not understand "that the President has had any special railroad training for the management of all the railroads of the United States" nor experience in selecting capable railroad men. He saw no reason now to subject the transportation system of the country to complete operation by the government, but thought if they were to be operated under government control Congress should settle in detail some of the policies and manner of operation. It had been the general understanding until Senator Smith spoke that there was nothing whatever in the bill to give the President control over the railroads. It authorized him to designate any person or persons to deter-

mine what kinds of traffic or particular shipments shall have priority in transportation and for the issuance of priority orders to a committee representing the railroads which shall provide the machinery for carrying them out. A similar bill which has been introduced in the House is to be considered by the House Committee on Interstate Commerce this week.

The Cummins bill to regulate the prices of railway supplies, S. 2354, referred to in last week's issue provides that on and after June 1, 1917, and during the continuance of the war, it shall be unlawful for any common carrier or any officer, agent, contractor, or sub-contractor of such common carrier, or any person, firm, or corporation manufacturing or producing any supplies or material used by any such common carrier, to pay, or agree to pay, or for any person, firm or corporation to charge or to receive from any such common carrier, its officer, agent, contractor or sub-contractor, or any person, firm, or corporation manufacturing or producing any supplies or materials used by any such common carrier, any sum in payment for fuel, supplies, equipment or material of any kind or description used, or necessary to be used, in the construction, maintenance, betterment, extension, or operation of the property of any such common carrier in excess of the unit prices applicable on June 30, 1916, on such article or articles of the same or similar kind, quality and quantity. It is provided, however, that such unit price may be increased or reduced as provided in section 2 of the bill, but in no event shall it be in excess of the cost of manufacture or production plus ten per centum.

Section 2 provides that whenever any dispute or controversy shall arise respecting delivery or the price to be paid for any article mentioned in said section, the President is authorized, whenever in his judgment such action is necessary to the public security and defense, to direct that such delivery shall be made and at such price as he shall determine, after full hearing, to be reasonable. He may give these directions at and for such times as he may determine, and may modify, change, suspend, or annul them, and for any such purpose he is hereby authorized to issue orders direct, or through such person or persons as he may designate for the purpose, to any of the officers, agents or employees of the aforesaid common carriers, persons, firms, or corporations. Any violation of the provisions of the act, or of any order issued in accordance with its provisions, shall constitute a misdemeanor. Any corporation guilty of such misdemeanor shall be punishable by a fine of not more than \$50,000, and any person guilty of such misdemeanor shall be punishable by a fine of not more than five years, or both such fine and imprisonment, in the discretion of the court.

REPRESENTATIVE PARK HAS INTRODUCED A SIMILAR BILL IN THE HOUSE

The House Committee on Interstate Commerce has favorably reported a bill similar to that which has already passed the Senate, to increase the membership of the Interstate Commerce Commission to nine and to authorize it to reorganize its work by divisions. The House Committee amended the Smith amendment, to require the Interstate Commerce Commission to suspend proposed advances in rates, to require the commission to make a report on all advances in rates since January 1, 1917.

The Senate Finance Committee in its consideration of proposed changes in the War Revenue bill which has passed the House has proposed a reduction from 10 to 5 per cent in the proposed tax on passenger, sleeping car and parlor car tickets and to avoid discrimination against railroad shipments has proposed to apply the 3 per cent tax on freight bills, also to shipments carried by motor vehicles. In place of the proposed 6 per cent tax on express transportation the committee has proposed a tax of 1 cent on each 25 cents paid for shipment and a similar tax on parcels post shipments.

Mikado and Consolidation Types Compared

Tests of Pennsylvania 2-8-2 Show 25 Per Cent More Tractive Effort at 10 M. P. H. and 60 Per Cent at 30 M. P. H.

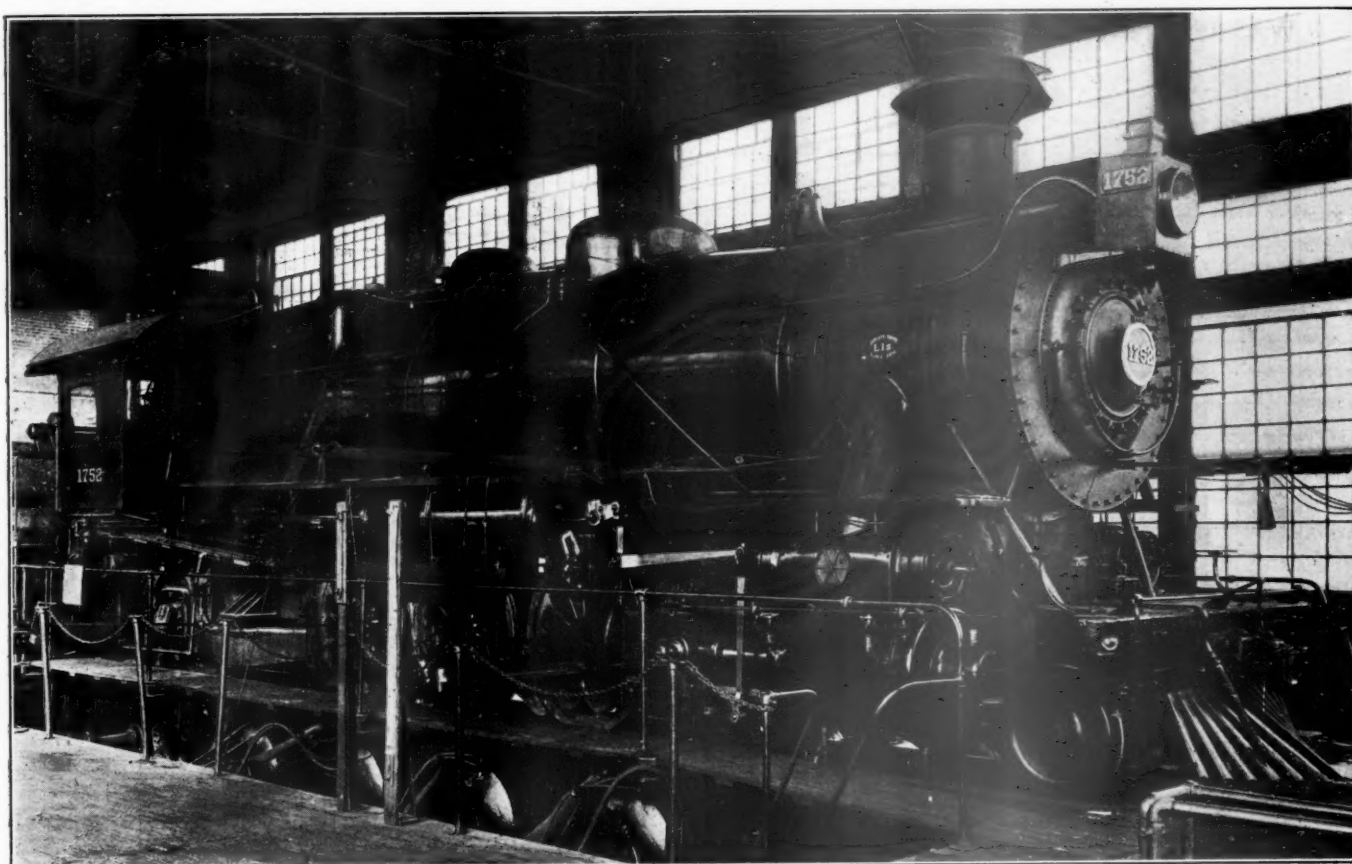
IN a previous article* there were given the results of tests on the testing plant of the Pennsylvania Railroad at Altoona, Pa., of a class E6s Atlantic type locomotive. The present discussion is based on Testing Plant Bulletin No. 28 (copyright, 1915, by the Pennsylvania Railroad Company) which deals with the tests of a class L1s locomotive.

For a long time the Consolidation (2-8-0) type was in general use for freight service on the Pennsylvania; but the requirements of heavier freight trains made greater locomotive capacity desirable, and as larger boiler capacity was essential to obtain this, the Mikado (2-8-2) type was resorted to. This locomotive was described in the *Railway Age Gazette*, July 3, 1914, page 12. The same refinement

is equivalent to 352.7 lb. drawbar pull per lb. of mean effective pressure.

It is worthy of note that with an increase over the Consolidation of 25.7 per cent in total weight, and of 25 per cent in tractive effort (the maximum calculated tractive effort of the Consolidation is 46,300 lb.), there is but 7.2 per cent

	Mikado Class L1s	Consolidation Class H9s
Weight in working order, total lb.....	320,700	251,050
Weight on drivers, working order, lb.....	240,200	223,400
Cylinders, diameter and stroke, in.....	27 x 30	25 x 28
Driving wheels, diameter, in.....	62	62
Heating surface, tubes (water side), sq. ft.	3,715.7	2,480.2
Heating surface, firebox (including arch tubes), sq. ft.....	301.5	189.9



Pennsylvania Mikado Type Locomotive on the Test Plant at Altoona

of design is present in this locomotive and in the class K4s Pacific type, as exists in the class E6s Atlantics.

The Consolidation locomotives in general use on the Pennsylvania for the heaviest freight service up to the time that the Mikado type was introduced were the H9s class. The table herewith gives the principal data for the two classes, and the results obtained in the test of the Mikado are compared throughout with the results of similar tests of one of the Consolidations. Both are simple engines and are equipped with superheaters and brick arches.

Using 80 per cent of the boiler pressure, the calculated maximum tractive effort of the Mikado is 57,850 lb., and the factor of adhesion is 4.08. The calculated drawbar pull

Heating surface, superheater (fire side), sq. ft.	1,171.6	809.0
Heating surface, total (based on water side of tubes), including superheater, sq. ft....	5,188.8	3,839.1
Heating surface, total (based on fire side of tubes), including superheater, sq. ft.....	4,847.7	3,536.5
Grate area, sq. ft.....	70.0	55.3
Boiler pressure, lb. per sq. in.....	205	205
Valves	12 in. piston	12 in. piston
Valve motion	Walschaert	Walschaert
Firebox	Wide Belpaire	Wide Belpaire
Tubes, number and outside diameter.....	237—2¼ in.	265—2 in.
Superheater flues, number and outside diameter	40—5½ in.	36—5¾ in.
Tubes and flues, length, in.....	226.51	180.19

increase in the weight on drivers, showing that a good weight distribution has been obtained.

The boiler of the Mikado is interchangeable with that of the class K4s Pacific type locomotive, tests of which will

**Railway Age Gazette*, March 23, 1917, page 635.

be dealt with in a later article. The proportions of the boiler were carefully considered and the firebox portion forms almost one-half the entire length, while the tubes, which are of $2\frac{1}{4}$ in. diameter, are but 19 ft. long, the ratio of length to inside diameter being 114. An internal projection exhaust nozzle, with an area equivalent to a circular nozzle 7 in. in diameter, is used with an inside extension stack 5 ft. 10 in. long, tapering from 24 in. in diameter inside at the top to 17 in. at the point where it bells out at the bottom. The bottom of the stack is $13\frac{1}{2}$ in. above the top of the exhaust nozzle.

The tests were all run with a wide open throttle, the speeds ranging from 7.2 to 31.1 miles an hour, with cut-offs from 20 to 80 per cent of the stroke. The coal used was run of mine, as used in freight service on the Pennsylvania, with a heating value between 13,600 and 14,300 B. t. u. per lb. An analysis of an average sample shows fixed carbon, 58.02 per cent; volatile matter, 31.59 per cent; moisture 1.20 per cent, and ash 9.19 per cent, with sulphur, separately

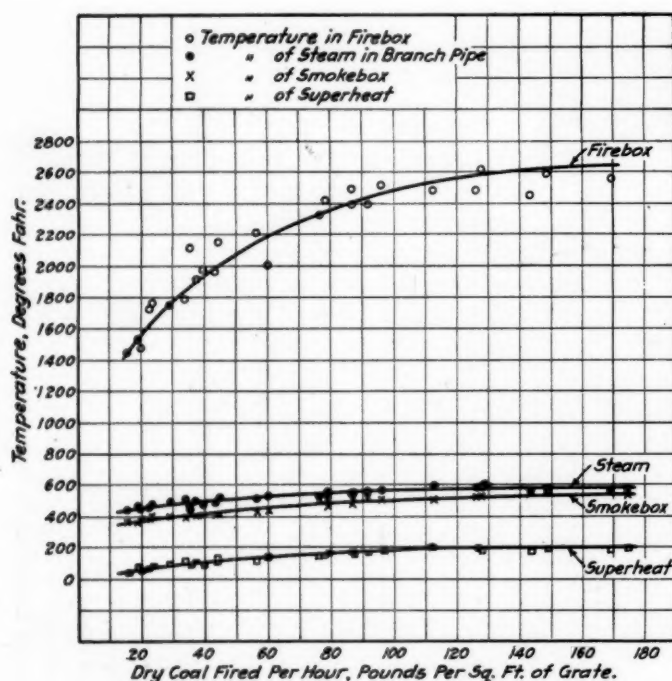


Fig. 1—Firebox and Smokebox Temperatures

determined, 1.44 per cent. The B. t. u. per lb. of dry coal are 14,140 and per lb. of combustible 15,590.

BOILER PERFORMANCE

The maximum steam temperature obtained was 590.6 deg., the superheat then being 207 deg. The temperature taken in the exhaust passage showed superheat in most cases, the maximum being 85.4 deg. The firebox and smokebox temperatures are shown in Fig. 1. It will be noted that, as a rule, the smokebox temperatures are below 550 deg., indicating the efficiency of the heating surfaces. The firebox temperatures above 2,400 deg., for rates of firing above 85 lb. per sq. ft. of grate per hour, are unusually high and the whole range of firebox temperatures is greater than is usual. Combustion was remarkably good and carbon monoxide in the smokebox gases did not exceed 0.5 per cent under any conditions. These tests showed rates of evaporation never before obtained on the test plant. The draft is shown in Figs. 2 and 3 in relation to the rate of combustion and the evaporation per square foot of heating surface. The ashpan air openings are inadequate, totaling 7.8 sq. ft. which is 11 per cent of the grate area. It has been found that this ratio should not be less than 15 per cent. The draft in the ash-

pan under maximum firing conditions, about one inch of water, is high.

From comparisons with tests of seven locomotives on the testing plant it is apparent that maximum evaporation is

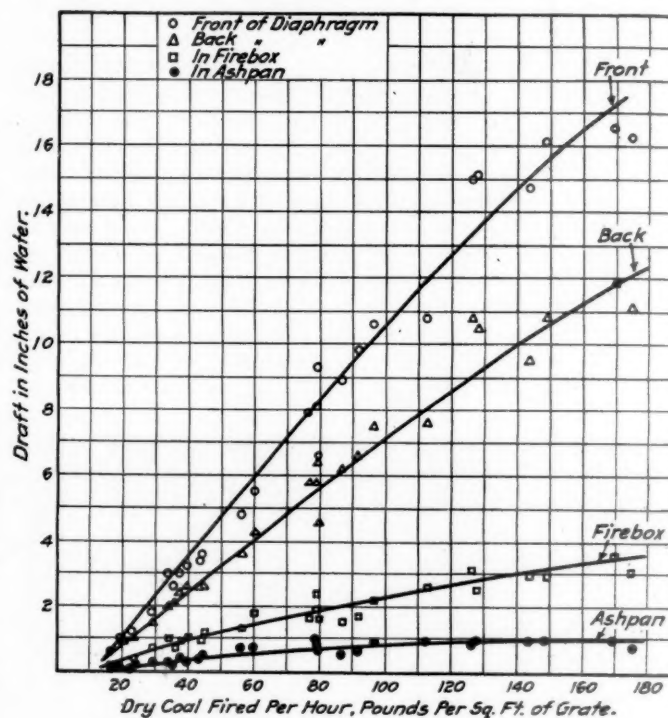


Fig. 2—The Relation of Draft to Rate of Firing

closely related to the fire area or the area of all the tube openings. These seven locomotives indicate that under normal conditions each square foot of fire area of the tubes will

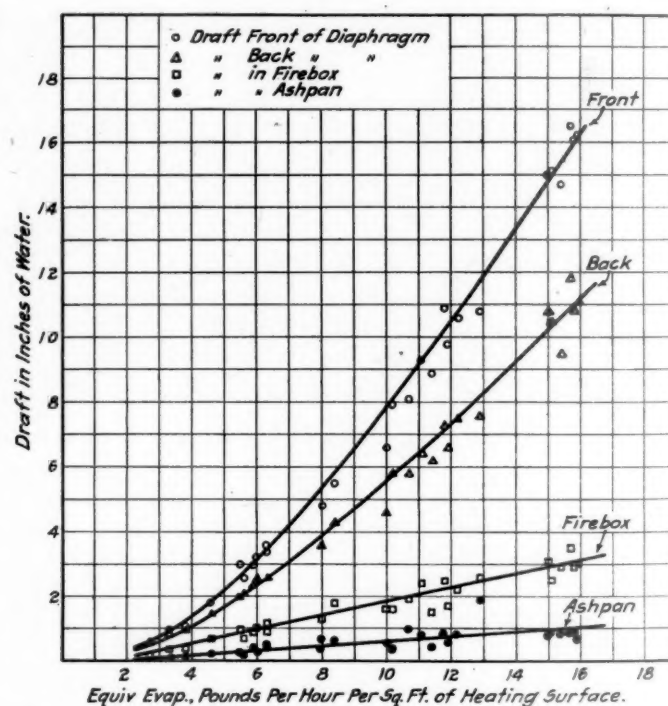


Fig. 3—Relation of Draft to the Rate of Equivalent Evaporation

give a maximum evaporation of about 7,000 lb. of water per hour. Quoting direct from the bulletin: "Considering further the proportions of these boilers, we have in the fol-

lowing table certain ratios and the maximum evaporation that it was possible to obtain on the test plant:

Class of locomotive	Ratios					Maximum evaporation per hour per square foot of heating surface	Corresponding rate of combustion, pounds per sq. ft. of grate
	Heating surface to grate	Fire area to grate	Firebox heating surface to grate	Tube heating surface to firebox heating surface	Firebox volume to grate surface		
	1	2	3	4	5	6	7
D16sb (8-wheel)	47.7	0.12	5.3	6.2	4.6	18.6	197
E3sd, Atlantic	43.5	0.09	3.3	9.2	3.7	14.5	104
K4s, Pacific	70.2	0.12	4.4	11.0	6.2	13.5	171
E6s, Atlantic	61.2	0.12	4.2	10.2	6.2	13.1	148
L1s, Mikado	70.2	0.12	4.4	11.0	6.1	12.8	163
H9s-1311, Cons.	64.2	0.13	3.5	13.0	3.6	11.6	132
K2sa, Pacific	80.3	0.14	3.9	15.0	4.6	10.9	147
K29s, Pacific	77.8	0.13	3.3	17.0	4.4	9.8	120
H9s-387, Cons.	63.9	0.13	3.4	13.4	3.6	9.6	93

"The ratio of tube to firebox heating surfaces (column 4) shows a range of values between 6 and 17, and in Fig. 4 this ratio and the maximum evaporation per sq. ft. of total heating surface have been plotted. The H9s-387 has a low maximum evaporation while the evaporation of the H9s-1311, as developed in a second series of tests, shows a normal rate

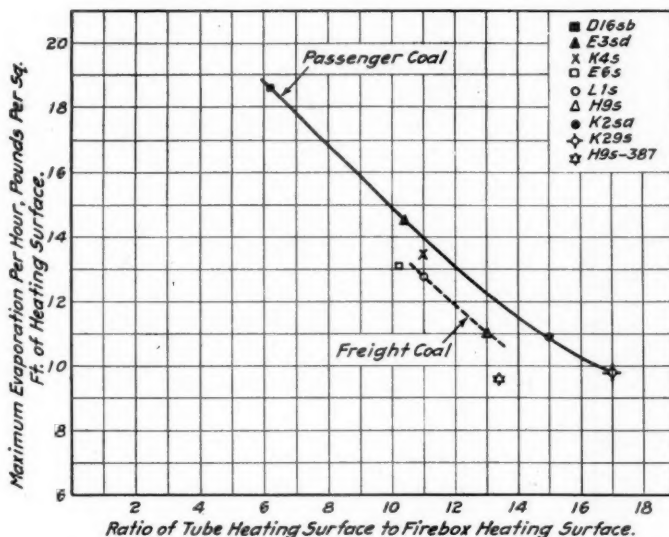


Fig. 4—The Effect of Heating Surface Distribution on Rate of Evaporation

as compared with the other locomotives of this group, all of which have superheaters.

"A maximum evaporation of 38,800 lb. of water per hour was obtained with the improved H9s and this is 11 lb. per sq. ft. of heating surface, or 5,308 lb. per sq. ft. of fire area of tubes. This increased rate of evaporation is still comparatively low, but considering the small firebox heating surface of the H9s where the ratio of tube heating surface to firebox heating surface is 13, while for the L1s it is 11, or in the L1s the firebox forms a larger proportion of the whole boiler than in the H9s, it is evident that the H9s cannot show as great an evaporation per unit of heating surface as the L1s, and for its firebox heating surface it evaporates about all that may be expected of the design."

It is evident from the exhibits in Fig. 4, that a relatively large firebox heating surface makes possible a high rate of evaporation per unit of total heating surface.

The advantage of the larger boiler is evident when comparison is made of the coal fired and water evaporated. The Consolidation reaches its maximum evaporation at 34,000 lb. per hour, the coal consumption rate being 8,000 lb. per hour; while the Mikado did not reach its evaporative limit

till about 60,000 lb. of water were being evaporated per hour, with a coal rate of 12,000 lb.

Equivalent evaporation per lb. of dry coal is shown in Figs. 5 and 6. The results for the Consolidation, it will be seen, are considerably below those for the Mikado, which had a range of firing between 20 and 180 lb. of coal per sq.

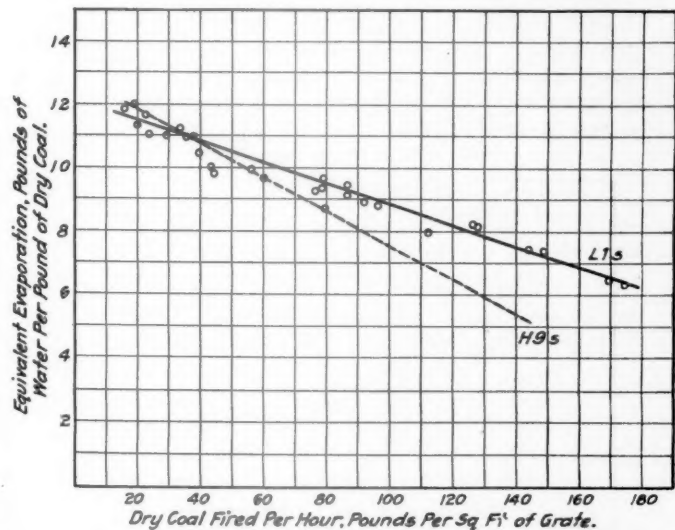


Fig. 5—The Relation of Equivalent Evaporation per Pound of Dry Coal to the Firing Rate

ft. of grate per hour, and at the highest rate of firing the water evaporated per lb. of coal is above 6 lb. On a basis of heating surface, the Mikado shows a range of evaporation between 3 and 16 lb. of water per sq. ft. of heating surface.

The boiler efficiency is shown by Fig. 7. The boiler horsepower at 34.5 lb. of water per horsepower hour from a feed water temperature of 212 deg. into steam at a temperature

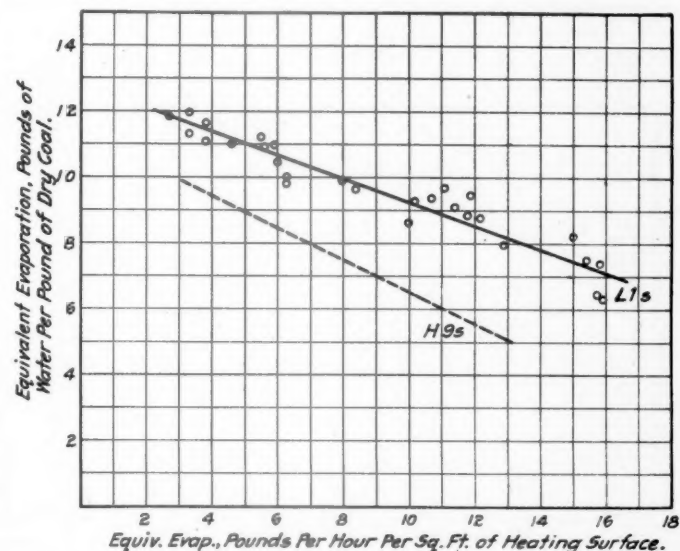


Fig. 6—Relation of Equivalent Evaporation per Pound of Dry Coal to the Rate of Evaporation

of 212 deg., ranged between 382 and 2,232. The efficiency of the boiler was between 80 and 45 per cent. It will be noted from the diagram how rapidly the efficiency of the Consolidation's boiler falls off, compared with that of the Mikado, at rates of evaporation above 25,000 lb. per hour. The Consolidation also showed a lower efficiency at all rates of firing above 30 lb. per sq. ft. of grate per hour. For the

Mikado, the firing rate was between 20 and 175 lb. per sq. ft. of grate, the efficiency of the boiler, as previously stated, ranging between 80 and 45 per cent.

ENGINE PERFORMANCE

The indicated horsepower of the Mikado covered a range between 356 with 20 per cent cut-off at a speed of 7.2 miles per hour, and 2,837 at 60 per cent cut-off and a speed of 31.1 miles per hour. The coal rate varied between about 2.5 lb. and 4 lb., the greatest economy being at about 1,500 i. hp., where the coal rate is 2.5 lb. per hp. hour. The coal per horsepower is shown in Fig. 8 and the water in Fig. 9. The best steam performance of the Mikado is at a rate of

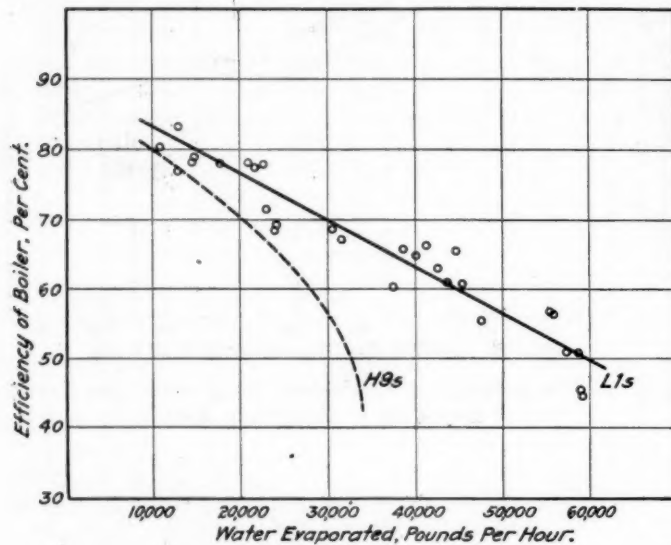


Fig. 7—How Boiler Efficiency Varied with Evaporation Rate

working of about 2,000 i. hp. The greater economy of the Consolidation is probably due to the higher degree of superheat obtained. The steam rate of the Mikado varies between 19 lb. and 24 lb. The maximum horsepower obtained from the Mikado, 2,837.2, is greater than that obtained from any other freight locomotive ever tested on this plant, the maxi-

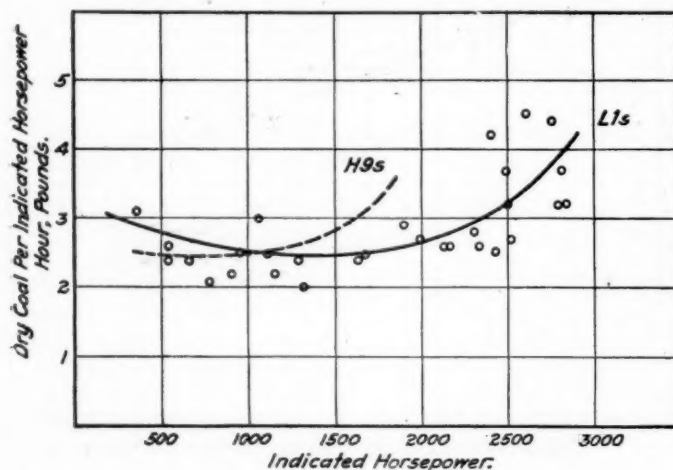


Fig. 8—Relation of Coal per Horsepower Hour to Indicated Horsepower

mum horsepower of the H9s class having been found to be about 2,100. On the basis of pounds of dry coal fired per hour, the indicated horsepower of the two locomotives is shown in Fig. 10.

In the matter of back pressure, the Mikado shows a minimum of less than one pound and a maximum of 16 lb. At

the maximum horsepower of the Consolidation, which was 1,800 in these tests, the back pressure is 8 lb., while the Mikado shows but 4 lb. at the same power. The larger exhaust nozzle of the Mikado, 38.3 sq. in. as against 30.9 sq. in. for the Consolidation, probably has an important bearing on this result.

The Mikado, which has larger cylinders than the Con-

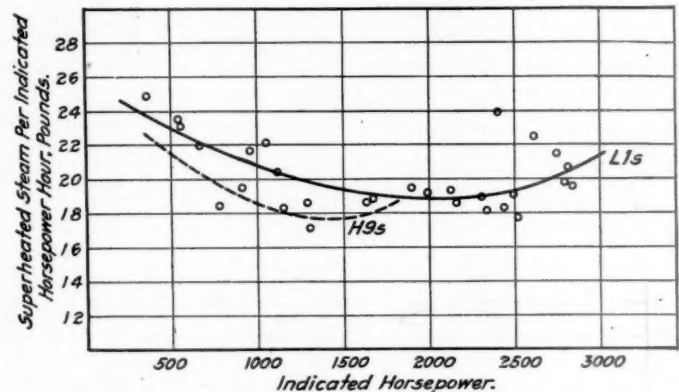


Fig. 9—Relation of the Water Rate to the Indicated Horsepower

solidation shows a corresponding increase in horsepower at cut-offs beyond about 40 per cent.

The engines of the Mikado use from 18,500 to 26,100 B. t. u. per i. hp. hour and convert into work from 9.7 to 13.7 per cent of the heat supplied. In plotting the thermal

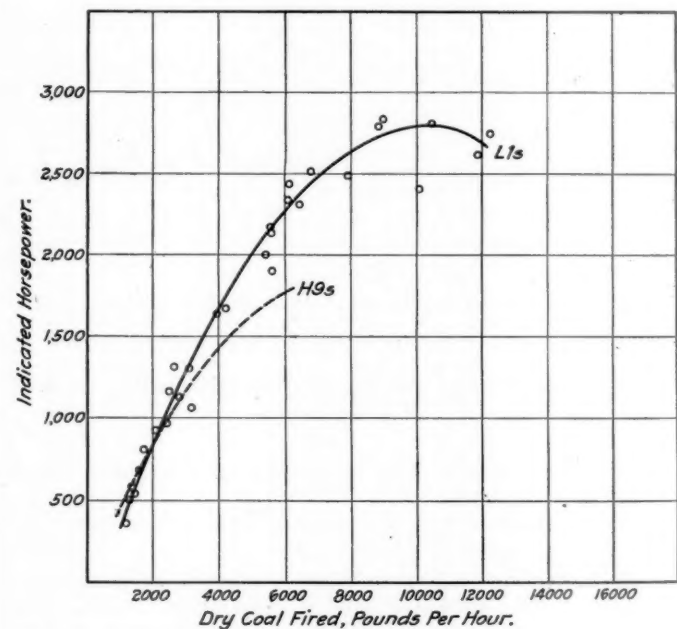


Fig. 10—Coal Fired in Relation to Indicated Horsepower

efficiency of the engines it is again found that they are the most efficient when developing about 2,000 i. hp.

DYNAMOMETER RECORDS

The dynamometer horsepowers reached are as high as 2,563, the dry coal fired per d. hp. hour ranging between 2.7 and 4.8 lb., while the consumption of superheated steam was between 20.1 and 34.6 lb. per d. hp. hour. The thermal efficiency of the locomotive reached 7 per cent. In tests of an hour or more, the drawbar pull ranged between 6,455 lb. at a speed of 170 r. p. m., or 31 miles per hour, with a cut-off of 20 per cent, and 48,962 lb. at 40 r. p. m., or 7.2 m. p. h., and 60 per cent cut-off. Higher pulls were ob-

tained in shorter tests, and the Mikado was shown to be capable of developing a pull of 59,000 lb. up to a speed of 7 m. p. h., 48,600 lb. at 18 m. p. h. and 32,200 lb. at 30 m. p. h. With the Consolidation, 50,500 lb. was obtained at 7 m. p. h., 33,000 lb. at 18 m. p. h. and 20,000 lb. at 30 m. p. h., showing the advantage of the Mikado over the Consolidation for all classes of freight service.

The steam consumption on the basis of dynamometer

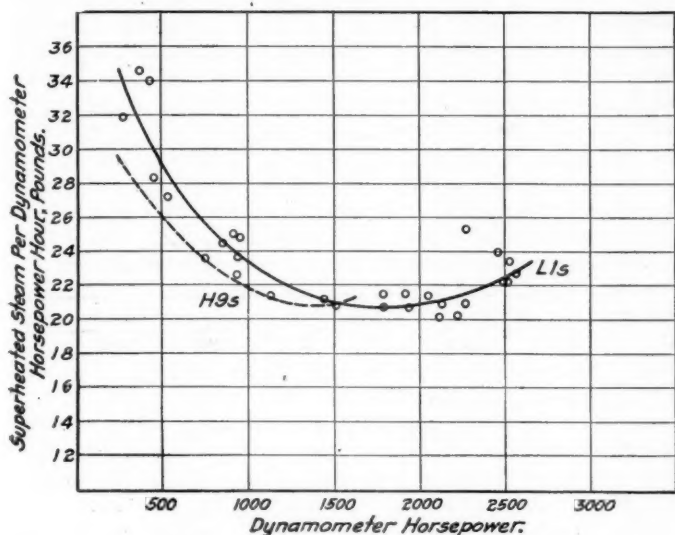


Fig. 11—Steam Consumption per Dynamometer Horsepower Hour

horsepower is shown in Fig. 11, while Fig. 12 shows the coal consumption. The water rate for the Mikado is comparatively high at horsepowers below 1,500, the best performance being at about 1,800 d. hp. where the steam rate is 20.5 lb. The Mikado shows its best coal performance at about 1,400 d. hp., the rate being 2.75 lb. per hp. hour.

It is possible to operate the Mikado throughout the speed

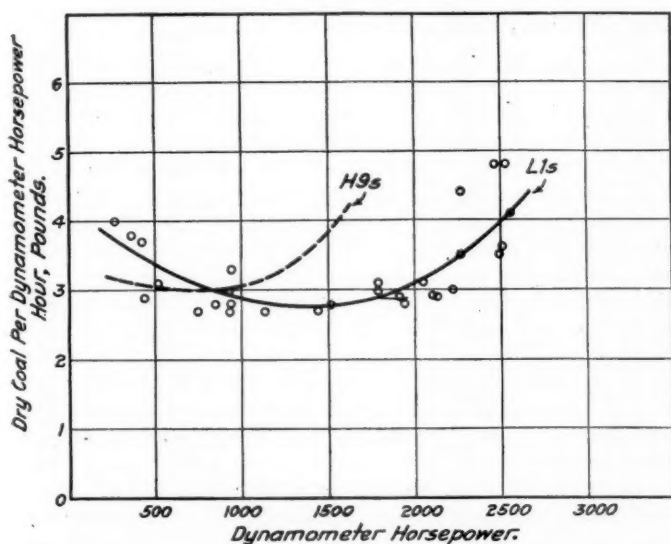


Fig. 12—Coal Consumption per Dynamometer Horsepower Hour

range of the tests at cut-offs between 25 and 60 per cent of the stroke, and still not exceed its boiler capacity. On one test, at 18 miles an hour, the boiler furnished steam for a cut-off of 80 per cent. To obtain the highest drawbar pull and at the same time its best efficiency, the locomotive must have a wide open throttle and at speeds below thirty miles

an hour the cut-off should be greater than 60 per cent.

The machine efficiency for the Mikado ranged between 64.8 and 94.5 per cent and for the Consolidation between 69.3 and 93.8 per cent. It will be seen that the two locomotives give similar results in this respect, notwithstanding the greater weight on the drivers of the Mikado. The machine efficiency increased up to 18 m.p.h., then decreased as the speed increased to 32 m.p.h. The thermal efficiency showed a tendency to increase with the speed up to 22 m.p.h., after which it gradually fell off. The range was from 3.9 to 7 per cent. The Mikado has some advantage over the Consolidation in thermal efficiency because of its larger boiler.

CONCLUSIONS

The satisfactory performance of the Mikado's boiler is indicated by its maximum evaporation per hour, 6,990 lb. of water per sq. ft. of fire area through the tubes. The design of the smoke stack and front end proved satisfactory, and with changes in the superheater, the all-round performance of the locomotive was most gratifying, the high

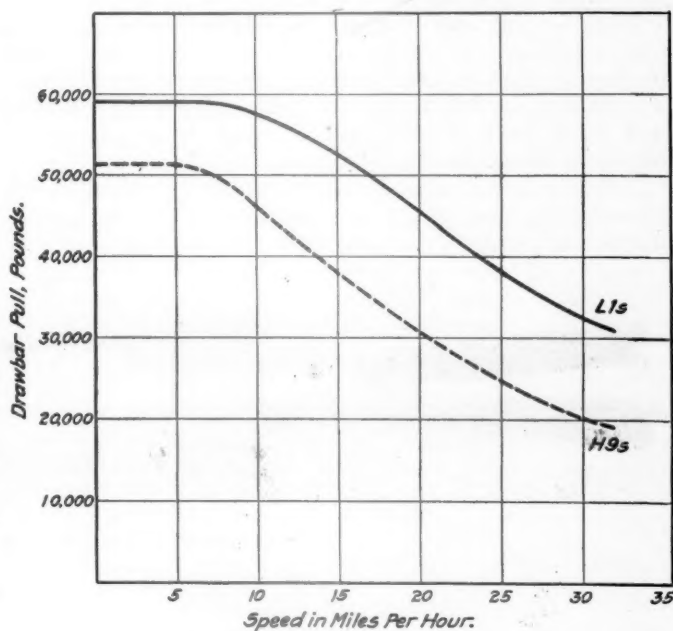


Fig. 13—Drawbar Pull Curve

horsepower developed being particularly noteworthy. The locomotive was designed to give a capacity about 25 per cent greater than the H9s. The drawbar pulls obtained, however, indicate that it gives 25 per cent greater pulls at 10 m.p.h. and 60 per cent greater at 30 m.p.h. A large number of these locomotives are now in freight service on the Pennsylvania.

BRITISH CANAL MILEAGE.—In England and Wales there are 3,639 miles of canals; in Scotland, 183 miles, and in Ireland, 848 miles—a total for the United Kingdom of 4,670 miles, or 3,822 miles for Great Britain. Of the total mileage, 1,363 miles are owned by various railway companies.

RAILWAY DEVELOPMENT IN THE MALAY STATES.—The last rail has been laid of the Ootapao-Kedah Railway extension of the Siam Railway connection in the Federated Malay States. Three construction trains, which also carry passengers, are being run from Ootapao with Singora connection. It is intended to run a weekly train from Singora, connecting Penang with the home mails. The Federated Malay States railways are reported to be running construction trains to the frontier.

AN IMPROVED DESIGN OF MANGANESE FROG

The Manganese Track Society, which was organized in 1913 by nine manufacturers of special track work, who collectively produce most of the manganese track work used, has recently adopted standards for the design of rail-bound manganese steel frogs of all angles from No. 4 up to and including No. 20, and for all sections of rail from 80 lb. per yards up and with a width of head of from $2\frac{3}{8}$ in. to 3 in. These standards have been prepared for the use of roads which now have no standards of their own and also to replace the wide diversity of designs of other railroads and of the manufacturers.

At the time of the organization of the Manganese Track Society the manganese track work industry was approaching an unsatisfactory condition. Its development had been seriously retarded through the lack of knowledge of the properties of manganese castings by the railways and also by many of the manufacturers. This condition, coupled with the keen competition for business, led to the preparation of designs by manufacturers in which the amount of material was reduced, causing some failures.

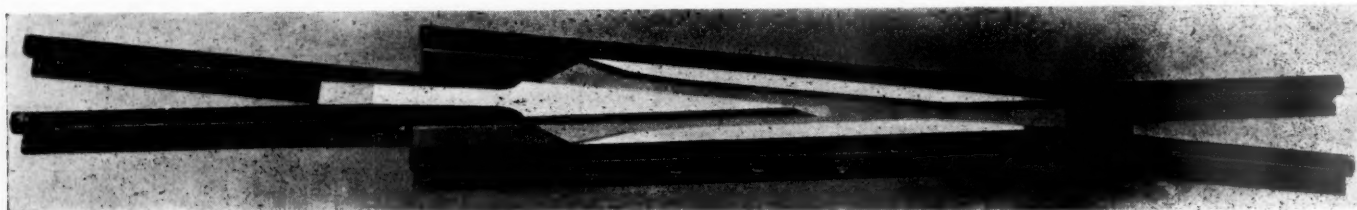
Matters were still further complicated by the fact that several railroads attempted to design their own frogs. With the lack of foundry experience the tendency of the railroads was to prepare standards which were expensive to construct and which were objectionable or faulty from a practical, service or manufacturing standpoint.

A study of the situation showed that in addition to the numerous designs of the manufacturers, 18 roads had attempted to prepare designs of their own, all of which were

and for any ordinary section of rail weighing 80 lb. or more.

The design finally adopted includes a number of important improvements over earlier construction. One special development is maintaining of the full section of the wing rail around the manganese insert. In previous construction it had been the very general practice to notch the wing rail at each end of the insert to receive the casting and to hold it in place. This not only required careful machining at the ends and along the line of contact between the wing rail and the casting, but the wing rail itself was weakened by the amount of this notching. With the new pattern the full section of the wing rail is maintained without any shaping of the base or head, thus avoiding not only the weakening of the rail, but the expense of notching it. The wing rail may also be replaced more readily with this form of construction. Another advantage results from the fact that instead of being built with a flat angle at the center, the rear face of the casting is straight, permitting more accurate fitting.

Another important improvement is in the design of the casting at the point of flare of the wing rail. In previous designs the manganese casting was commonly spliced onto the heel rails, approximately opposite the point where the flared wing rail receives the blow of the wheels. The continual hammering stretched the bolts at and back of this point with the result that they became loose. This resulted in the loosening of the casting from its connecting rails, creating a point of weakness and early wear. In the new design the manganese casting itself extends across the flange way at this point and is flared to receive the blow of the wheels, with the result that the entire shock is taken up in the casting itself and no strain is placed upon the bolts. The entire



Photograph of the Frog Showing the Manganese Insert

different. This multiplicity of standards resulted in great confusion and in large expense for patterns. Many of the standards were defective in design, some being deficient in section and others being excessive for best results from foundry practice.

In attempting to remedy this situation a committee of the manufacturers and founders was appointed by the society to combine the experience of the track work manufacturers with the special experience of the manganese founders and to undertake the work of standardization. The first work of this committee was to establish definite governing limits for the details of design, to determine the proper dimensions and prepare designs of manganese steel castings for the various track structures, such as frogs, crossings, etc. After the adoption of these limits the committee studied various plans and undertook to prepare a common design for rail-bound manganese steel frog which would include the desirable features of the many designs then existing. Certain manufacturers had developed details which had been patented to protect the originators in their exclusive use, but early in the work of the committee these patent rights were waived and the special features of each were made available for incorporation in the standards. Each member of the committee redesigned his frog from the information at hand and submitted his plans to the committee as a whole, which then undertook the preparation of the standard which would include all of the desirable features of these designs and to formulate rules to apply it to frogs ranging in angles from No. 4 to No. 20,

design of the frog is such as to permit the use of the standard lengths of frogs and of any lengths greater than those of the manganese castings plus the splicing length.

One of the principal reasons for difficulty with earlier frogs resulted from the attempt to decrease their cost by a reduction in the amount of metal inserted. In designing the new frog the first consideration was that of strength and efficient service, and no attempt was made to reduce the cost of construction at the risk of weakness or reduced efficiency. However, the uniformity in design which will follow the scrapping of the large number of old patterns and the substitution of one standard design will result in material economy in construction which will largely if not entirely offset the increased cost resulting from the greater amount of material used.

Complete rules, in booklet form, for laying out the design and also detail drawings of standard angle frogs have been prepared and published by the Manganese Track Society. The track committee of the American Railway Engineering Association has also incorporated the rules for the design in its report, and they will be printed in the proceedings of this association.

PERU'S IMPORTS OF RAILWAY MATERIALS.—The United States supplied \$536,354 worth or 80 per cent of the total railway imports of Peru in 1915. The total value of the supplies imported was \$664,103 the largest item of which was rails and accessories, \$445,420.

Modern Train Despatching—Some Needed Forms*

A Study of the Despatcher's Language Problems;
Importance of Uniformity and Strict Standards

By Harry W. Forman

THE standard code does not provide all of the train order forms ordinarily used. The train despatchers have to frame all the others that may be needed and this accounts for such diversity in their work, each despatcher being a law unto himself in the matter of choosing words. That despatchers' instructions often are far from clear, technically unsound, or susceptible of opposite interpretations, are facts quite well known.

A comparison of orders found on different roads will reveal the use of a wide range of language to accomplish the same end; and it will be found sometimes that no two despatching headquarters on the same road are in perfect accord. Seldom indeed do the three despatchers working together on a certain district agree upon all the forms that they must use, and then scrupulously keep faith with each other in the matter of always using the same words to accomplish the same movement. There appears to be an unwritten code of ethics under which despatchers refrain from calling the attention of another despatcher to improperly worded orders, unnecessary delay to trains or extravagance in the handling of crews or engines. Anyone feeling disposed to controvert these statements should first make a careful check-up on his own road.

One reason why there is such great lack of uniformity is because a train-rule department is not maintained. Every road should have such a department, supervised by an officer who has ample time to carefully inspect all used train orders, clearance cards and despatcher's record-books. Chief despatchers are not always located in the same room with and rarely have the time to check with care the work of their despatchers. Not every trainmaster takes a keen interest in this matter, and often it is impossible for him to get the time to look over and call attention to all orders which provoke argument or cause misunderstanding on the road. Despatchers rarely hear the road arguments, for the trainmen desire to retain the despatchers' good will.

It is highly important that the same wording be used always to direct the same kind of movement. When printed forms are not provided, the other necessary forms should be typed and placed where despatchers can readily refer to them; and they should not be varied from. Having habitually executed like orders, trainmen and enginemen would then always know perfectly just what their orders meant and how properly to fulfill them.

"Rights of Trains on Single Track" was the first book ever published which discussed train despatching in full detail and presented forms of orders to meet practically every movement known to the author at that time. But the world has not stood still since the publication of that book; questions concerning train order forms not authorized by the standard code always will be a live issue with those despatchers who desire to issue uniform train orders and to be always safe. For those this article is written. And the doubting despatcher is not forgotten; the one who is looking for some one upon whom all responsibility can be unloaded in the event of objections being urged by the superintendent

or trainmaster. The writer is not unmindful also of the trainman or engineman who may claim that the forms are too radical and likely to "kill every man on the road." (This is the mildest form of expression used when a train rule man ventures beyond beaten paths. Should any company care to make use of the supplementary forms of orders here presented, I will assume full responsibility for results.

The suggested forms of train orders have been worded as they would read had the word "will" been retained by the code makers. That is to say, the grammar is correct if "will" is supplied. The code makers, however, overlooked this point in two examples, 1 and 4, under Form H. They say, under that form, "Eng. 292 works extra" when, to be consistent with the rest of the forms the order should read "Eng. 292 [will] work extra" the "will" being omitted but understood. We cannot say "Eng. 292 will work extra."

The idea that train orders need not be punctuated or paragraphed, as may be necessary to make each movement stand out and be perfectly clear, must soon give way to better practice. Fully one-half of the "O S" operators are poor penmen, and all helps should be availed of. Another coming improvement is the specially-built typewriter, having large letters and plain figures, to be used in making train orders. This should not be opposed. A larger number of legible copies can be made at one writing with a typewriter than with a stylus. Despatchers have so little time to listen to repetitions when operators find it necessary to make additional copies, that I fear new code Rule 209 is not always respected.

In the continuous form of order it is not always possible to place all sentences in their same relative position; but once the principles are well understood this slight change in arrangement should not result in misunderstanding. I shall suggest enough forms to care for these varying conditions, showing at the same time others which are not so well or clearly worded, and which should not be used.

Six general principles should be kept prominently in mind: (1) Brevity. (2) Uniformity. (3) Clearness of expression. (4) Thinking of the proper way to word an order before starting to transmit it. (5) Underscoring the order number and each word and figure in the body of the order while it is being repeated by each operator, neither writing ahead of nor behind his sending. And (6) the despatcher must not only carefully scan the train sheet. He must enter thereon all extra trains before creating them. He must be governed by the book of rules in the matter of spelling out the time of day.

MEET, RIGHT, WAIT AND RUN-LATE ORDERS

Order 1. (Proper). "Two Extras 43 and 45 West take siding meet Extra 42 East at E. Take siding meet Extra 58 East at F. Hold main track meet Extra 32 East at G."

Extras 43 and 45 are entitled by rule to the main track at G, but the "Hold main track" in the last line is a safeguard against misunderstanding. The principle here illustrated applies to all situations wherein the despatcher reverses time-table superiority at one point and in such manner that there may be doubt as to whether the regular time-table superiority shall govern at some other station mentioned in the same order.

Order 2. (Improper). "Extra 25 West meet Extra 27 East at B and Extra 28 East at C. Extra 25 West take siding."

If instructions as to holding main track, or taking siding,

* The forms of train orders given in this article are assumed to have been issued on a railroad division or subdivision on which the stations are situated as shown below; that is to say, A is at the East end of the division and Z is at the West end. Westward trains are superior to eastward trains of the same class. The westward trains bear odd numbers. Numbers 1 and 2 are first-class trains; numbers 51 and 52 are second-class trains.
A.....B.....C.....D.....E.....F.....G.....Z
EAST. WEST.

must be given in some other part of the order not directly coupled with the order to meet, the despatcher, at the very least, should indicate at which stations such action must be taken. Even though this be done, a subsequent change in the meeting point will lead to contention, as even "Extra 25 West take siding at C," given in a sentence by itself, would seem to be a distinctive movement and appears not to be superseded when the meet is superseded, or the train to be met at C is annulled.

It is found everywhere that an order directing a train to take siding and wait until a given time is interpreted in two ways. Some contend that the train directed to take siding must do so regardless of when it may pass such station, while others argue that the order is dead at the time named and trains must be governed by the rules thereafter. Instead of having to render a decision, why not word the movement so that it cannot be misunderstood? Make it: "No 51 take siding at B. No 51 wait at B until 12 15 p m for Extra 38 East." Under this form, No. 51 must take siding at B even though it arrive there after 12:15 p. m., unless it is clearly seen that the entire main track through the station is unoccupied and that no flagman is there.

Order 3. (Proper). "Extra 29 East get this order hold main track and meet Extra 30 West at D."

The words, "get this order," are not of themselves authority for extra 29 east to hold main track at D, as the new code provides (Last paragraph, Rule 208) that this information must be given whenever the order is placed as first notice of restriction at the place of meeting or waiting. A train is made superior by right, class or direction; "Get this order" is none of these.

Order 4. (Proper). "Extra 31 West run by back in and meet Extra 32 East at C."

Order 5. (Proper). "Eng 3 run extra Z to A with right over No 51 and meet Extra 56 West at G."

Order 6. (Proper). "Eng 100 run extra A to Z meet Eng Extra 15 East and Psgr Extra 106 East at D and has right over No 52 to G and at G."

Under Order No. 6 extra 100 west is entitled to the main track at B, C, D, E, F and G over No. 52. When the limits of an extra are once clearly defined in an order, it is unnecessary to repeat such limits when again referring to the extra in the same order. Neither is it necessary to refer to the engine on the same regular train more than once in the same order. When more than one extra is to be met, as in Order 6, to describe them requires seemingly additional unnecessary words, but this is somewhat offset by the advantage it affords in assisting trainmen to determine whether or not a train at a station is the particular one in which they are concerned.

Order 7. (Unnecessarily long). "Extra 37 East has right over No 51 Z to G and will hold main track at G against No 51."

Order 8. (Proper). "Eng 41 meet Four Extras 1, 36, 137 and 3 West at Z and run extra Z to A with right over Two Extras 42 and 75 West to B not pass there unless these extras have arrived, but wait at D until 11 59 a m and C 12 17 p m."

As extra 41 is moving in the direction in which trains are inferior, it is not necessary to instruct it to take siding at B, the order being so worded that extras 42 and 75 must be met there, unless found on some siding before arrival at B. Not necessary to repeat the word "until" at each waiting point. In this example, extra 41 must wait until the times named. If this is not intended, add the trains to be waited for. I have seen engine numbers so written by operators that the exact number could not easily be made out, hence "Four." Indicating the total number of extras is especially desirable where there are both large and small numbers on a division. Should the meeting point have to be changed from Z, add "instead of" to the order for extra 41, omitting from other copies.

Order 9. (Proper). "Eng 44 run extra A to Z with right over Extra 45 East to G. Take siding at G for Extra 45 East and not pass there unless it has arrived. Wait at E until 11 45 a m for Extra 45 East."

Note that in the case of a westward extra instructions must be given to take siding. Also observe that the order is so worded that extra 44 west is not required to take siding at G in event of extra 45 being met elsewhere.

Order 10. (Partly unsafe). "Eng 13 run extra A to Z with right over No 52 Eng 2 to G. No 52 get this order at G. Extra 19 East has right over Extra 13 West G to A, but wait at F until 5 45 p m for Extra 13 West."

Unsafe, for the reason that should No. 1 come along and extra 13 west flag on it from some point east of G to G there would be nothing to prevent extra 13 from running from G to Z regardless of extra 19 east. The fact that extra 19 may have left Z before the order was issued and, therefore, it was necessary to place the order for it at some other office east of there, should not prevent spreading the limits over the entire district, or from the station where extra 19 is known to be at the time the order is given.

Order 11. (Proper). "Eng 1 run extra A to Z with right over Extra 2 East to G.
Eng 2 run extra Z to A with right over Extra 1 West to G."

In practice, this example also includes in the proper places a string of waits for both extras. The order is one often used in the south and west where night offices sometimes are 60 miles apart.

Order 12. (Proper). "First and Second 1 Eng 24 and 65 meet No 2 at G."

Order 13. (Proper, but I prefer Order 12). "First 51 Eng 12 and Second 51 Eng 14 meet No 52 Eng 16 at G."

Order 14. (Proper). "First and Second 1 meet No 2 at B. First 1 Eng 17 run 4 hours late and Second 1 Eng 91 run 4 hours and 25 mins late A to Z."

Order 15. (Proper). "First 1 wait at C until ten one 10 01 a m for No 52."

Second 1 wait at B until eleven fifteen 11 15 a m for No 52."

Order 16. (Improper because misleading). "First 1 wait at C until 10 01 a m. Second 1 wait at B until 11 15 a m for No 52."

Failure to state what first number one must wait for at C is likely to cause some conductors to leave there on the arrival of No. 52. Others may contend that first number one is waiting only for time, which is true, and not conditional upon trains arriving before the time named.

Order 17. (Proper). "First 52 wait at G until 9 30 a m instead of 9 45 a m for Extra 34 West."

In reducing time, use "instead of"; but in increasing the time in a "wait" or "run-late" order these words are wasted, as all orders must be fulfilled.

An order addressed to eastward extras at Z, directing them to wait there until, say 2:30 p. m., must be annulled after that time. It does not automatically annul itself, though many despatchers and operators seem to think that it does. Operators are not permitted to decide when orders addressed to trains need not be delivered. Rule 214 makes this clear; but a completed order addressed only to the operator may be filed, without annulling, when it is fulfilled. In this connection, consider also Rules 82 and 208. An order directing number one to run one hour late is not superseded by a later order sent to the train at the same office ordering it to run more than one hour late. Both must be delivered by the operator, unless the one stating the lesser time is annulled by despatcher.

Order 18. (Proper). "Extra 27 East wait at East Portal Tunnel 15 until 10 45 a m for Work Extra 11."

Order 19. (Improper, because neither end of the tunnel is mentioned). "Extra 27 East wait at Tunnel 15 until 10 45 a m for Work Extra 11."

Order 20. (Proper). "No 1 run 50 mins late A to G 40 mins late G to Z and wait at G until 6 15 p m."

Order 21. (Misleading when addressed to trains other than No 1). "No 1 run 50 mins late A to G and 40 mins late G to Z. Wait at G until 6 15 p m."

Order 22. (Proper). "No 2 run one hour and twenty 20 mins late Z to C and wait at C until 4 37 p m."

EXTRA TRAINS

Order 23. (Proper). "Eng 2 13 and 214 run as Three extras A to Z with right over Extra 55 East, but wait at B until 1 30 p m. D 2 10 p m E 3 01 p m and G 4 10 p m for Extra 55 East.
Eng 55 run extra Z to A with right over No 51."

Order 24. (Proper). "Eng 30 has until nine thirty 9 30 a m to run extra Z to G with right over—."

Order 25. (Less suitable for this particular movement). "Eng 30 run extra Z to G with right over—. This order is annulled at 9 30 a m."

Order 26. (Proper). "Eng 32 run extra G to B and return to G."

Extra 32 must pull into siding upon arrival at B. If an open office, report to operator before returning. Clearance card unnecessary, unless train-order signal is at stop. Despatcher must not act on restricting orders placed at B for this extra until acknowledged by conductor, as there is too much risk; the crew might only come to first switch and start back from there, not fully understanding the code instructions relating to this movement, which, by the way, ought to be amplified.

Orders reading "After No. 52 Eng. 4 becomes more than 12 hours late, Eng. 4 run extra to A," and, "Eng. 25 and Engs. 30 to 35 coupled run as First and Second 51 A to Z," seldom are necessary, but are unobjectionable.

An order to run extra Z to A, with right over all trains, does not suspend yard Rule 93, nor relieve such extra from fully guarding its rear, as prescribed by Rule 99. Any following train which could possibly pass this extra must also be given the order.

WORK TRAINS

Order 27. (Proper). "Engs 25 and 30 work as Two extras 6 45 a m until 7 05 p m between D and E protecting against each other and second class trains. Not protecting against other extra trains except protect," etc.

Order 28. (Proper when issued the evening before). "Eng 33 work extra 6 45 a m until 7 05 p m April 2 between D and E, etc."

Order 29. (Seems better than code form as the dates make it impossible to misunderstand). "Eng 34 work extra 9 30 a m April 1 until 8 45 p m April 2 between D and E, etc."

Order 30. (Proper). "Jumbo 1202 (Or, Steam Shovel No 2) work extra 7 01 a m until 6 01 p m daily except Sunday between East Portal Tunnel 1 and Home Signal West of Tunnel 1 with right over all trains. Upon receipt of proper hand signal trains will proceed through these limits."

Order 31. (Proper). "Eng 65 work extra 9 30 a m until 6 10 p m between D and E keeping clear of Extra 79 West. Protecting against second class trains. Not protecting against extra trains except protect against Extra 32 East after 10 30 a m Extra 58 East after 12 30 p m and Two Extras 43 and 45 West after 2 45 p m. No 52 Eng 70 get this order and wait at E until 4 45 p m for Work Extra 65."

Order 32. (Improper, because not clear as to just when extra 76 must be cleared). "Work Extra 292 clears Extra 76 East. Protects against Extra 90 West and Extra 85 East between D and E after 2 10 p m."

Order 33. (Improper). "Work Extra 292 has right over all trains except Extra 65 West between D and E. Protects against Extra 65 West after 11 45 a m."

Order 34. (Proper). "Work Extra 292 has right over all trains between D and E except protect against Extra 65 West after 11 45 a m."

When it is remembered that work extras must protect at all times against other extra trains, unless ordered not to do so, the error in Order 33 is apparent. Giving right over all trains, except extra 65, as in order 33, compels the work extra to keep clear of, or protect against that extra before 11:45 a. m., the same as afterward. It is extremely doubtful, however, if trainmen would so understand; probably they would take the order to mean that they might disregard extra 65 until 11:45 a. m. It is up to train despatchers to familiarize themselves with these unsafe, fine technical points and so word orders that they can be understood in only one way. In some situations I favor "Keeping clear of," instead of the code expression "clears," Order 31, for example.

Order 35. (Proper; code example 4, Form H, not applicable as to arrangement of station limits). "Work Extra 10 protects against Extra 32 West after 1 15 p m and Extra 62 East after 2 40 p m between D and E."

While it is true that a later order sometimes qualifies a former one, only one train may be given right over all trains within the same limits at the same time. A later order also giving a second train right over all trains, does not modify or annul the superiority of the first train. The orders conflict. Two work extras may be given right over all trains

within the same limits, except that at least one of them must be directed to protect against the other. when practicable, the order should read, "Protecting against each other and with right over all other trains." An order to work extra between F and G does not include the main track at either of these stations.

ANNULMENTS

An order may be given reading "All former orders annulled." If addressed to No. 52, that train still has authority to run as No. 52. If addressed to a train which was created by train order, such train is thereby made void.

When annulling an order of a past date, mention the date of the order.

Order 36. (Proper.) "That part of Order No 204 reading D until 5 05 a m is annulled."

Order 37. (Proper). "Second 52 due to leave Z April 2 has arrived at G with no signals and is annulled G to A."

Order 38. (Proper). "No 51 due to leave A April 2 and No 52 due to leave Z April 2 are annulled between A and Z."

Order 39. (Proper). "At ten thirty 10 30 a m Order No 72 is annulled."

Order 40. (Proper to add to orders creating trains where there are no train registers). "At 6 50 a m all overdue trains except Nos 51 and 2 have passed (Or, have arrived and departed from) G, or are annulled."

SUPERSEDURES

"Order No 243 should read Extra 10 West instead of Extra 58 West."

"Order No 247 should read Eng 27 instead of Eng 32."

"No 1 has Eng 101 instead of Eng 97."

MISCELLANEOUS

Orders creating trains must be addressed to engines. Should it be desired to annul or change the identity of an existing train, address such order to the train, not to its engine. Clearance cards must be addressed to regular or extra trains, not to engines, except occasionally to a yard or helper engine not running as a train. After having cleared a train, should the operator find it necessary to deliver to it another order, he must get hold of the former clearance card, destroy it and deliver a later card calling for all orders delivered; or, if unable to recall the original card, make the second one read, "I have one more order for your train," specifying in the proper place on the form the number of the later order. Rule 219 must not be violated, however.

An order may be addressed to "All Concerned," "All Trains Starting From Z," "All Freights," etc. An order may be given to an operator, reading, for example, "Do not deliver Order No. 17 to No. 2 today." A train may be run late on a schedule order. An order for a passenger train, containing a string of "waits," is more simple than a run-late order, because with it there is no adding of minutes. Also it enables the despatcher to get more trains over the road, as there are no "step-downs" that cannot be used by anyone.

Make a painstaking study of proper wording; and, once a standard is fixed, never deviate therefrom. Say "Automatic signals Tunnel 13 out of service," not "out of commission." "Passenger trains reduce to 25 and freights to 15 miles an hour," not "Passenger trains reduce speed to 25 miles per hour and freight trains reduce speed to 15 miles per hour." "Stock between B and C," not "Look out for stock on the track," or "on the right of way."

"300 head of cattle feeding on right of way about one mile East of Z. Run carefully. Stop if necessary to avoid striking," not "300 head of cattle feeding on the right of way about one mile East of Z. Reduce speed so that train can be stopped in shortest possible space and run very carefully at this point taking every precaution to prevent running into them." "West switch at D cannot be used," not "West switch at D cannot be used until repaired." "Take full tank of water at D," not "On account of shortage of water at A take a full tank of water at D." As well say, "Account No. 1 being late today, No. 2 meet No. 1 at C." "Spur track at F is unsafe for big engines,"

not "Spur track at F is unsafe for big engines to go on." "East switch at C cannot be used. Reduce to 10 miles an hour over it," not "East switch at C cannot be used. Reduce to 8 miles an hour over East switch at C." "Rocks very close to south side of track at mile post 305," not "Rocks on south side of track at mile post 305 very close to track."

Ordinarily, slow orders or track orders are placed only at terminals. It is burdensome to have to reissue when trains which left such terminals are given new running orders at intermediate stations. To avoid having to do so, it is proper to add to a new order, "Respect slow (or, track) orders." In any casual event, or case of uneasiness or doubt, an order may be given, reading, "All former orders except Order No. 4 are annulled," or, "Respect Order 275." Trainmen and enginemen must then continue to be governed by the orders (No. 4 or No. 275 as the case may be.) Many operators make poor or slovenly copies and rarely pay attention to punctuations as sent them by despatchers. This being true, despatchers cannot be too careful in so clearly wording orders that carelessness in writing them cannot destroy their meaning. Couple up movements with "but," as in Order 8, "and," as in Order 20, etc. There are times when time and numbers should be duplicated by spelling, even if the book of rules does not so require.

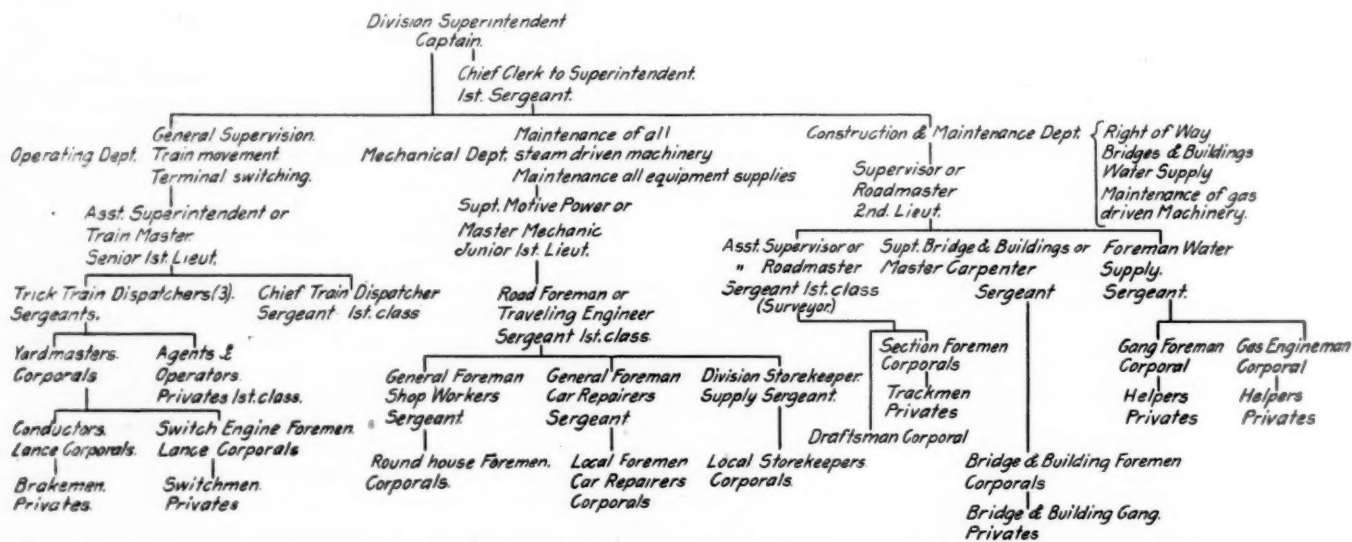
The foregoing notes cover about all ordinary movements,

for this emergency, the following form could be used: "At ten thirty 10 30 p m No 52 due to leave Z April 2, is annulled between Z and A. Your attention is particularly called to the time that this annulment is to take effect."

When a regular train becomes more than 12 hours late, or when an extra loses its authority to run or work, all train signals must be taken down. The engine and cars thus caught between stations may thereafter only be moved under protection of flagmen, expecting trains to approach from either direction at any moment and under full speed. Headlight should not be concealed, except as prescribed by Rules 17 and 18.

ORGANIZATION OF CHICAGO REGIMENT PROGRESSING RAPIDLY

The Chicago railway regiment, the Third Reserve Engineers, is being rapidly enlisted to full war strength. On June 1, 714 men had passed the physical examination and had been accepted for service. Applicants are being accepted at the rate of 75 a day, so that a full quota of enlisted men for the regiment is assured. At the time of writing 300 men were quartered at the municipal pier and orders had been sent to the rest to report for duty at once. The Chicago unit will receive its preliminary training at the pier prior to its departure for France. The regiment is one of



Note: Mess sergeant and commissary are not included because there is no similar department in a railway divisional organization. According to above plan the commissary work would be under supervision of company officer best situated for the purpose.

The plan does not utilize all of the sergeants. Two are in reserve for

special assignments such as General Yard Master, Station Master, Extra Dispatchers, etc. First sergeant placed on chart adjacent to captain to simplify chart. He is entirely subordinate to lieutenants, acts as a clearing house for paper work.

Tentative Plan for the Organization of One Company of the Railway Operating Regiments, Which Will Take Over a Division

except one, and that one is the most difficult of all to care for. Sometimes a crew, on account of meeting with an unexpected delay, must tie up under the law at a blind siding where there is no telephone. To prevent this train from thereafter delaying other trains, action should be taken before such crew leaves the last open office. If no meeting orders are in effect relating to this crew, all other trains concerned can be given right over them, with "waits," but this is not always practicable. Some cases can be handled as outlined by Order 24 (above), but if the nearly-dead crew is on a regular train, such train must be annulled after a given hour. As occurrences of this kind do not come up for solution very often, despatchers can well afford to go out of their way to explain in detail, even at the expense of a few seemingly unnecessary messages, or a somewhat lengthy train order. Until a bulletin is issued fully caring

three operating regiments and its organization will be similar to that of an operating department of a railroad. Each of its six constituent companies will be expected to operate a section of railway equivalent to an ordinary railroad division. A tentative organization of a company was recently charted by Lieut. E. H. Shaughnessy, formerly trainmaster of the Chicago & North Western, and submitted to his superiors for consideration. It shows the duties which will be allotted to each officer of the company and the title ordinarily applied to a corresponding position on American railways.

A tentative list of officers of the regiment was published in the *Railway Age Gazette* of May 11, but many changes have taken place since then. The probable final list of officers is as follows: Colonel, W. C. Longfitt, of the regular army; lieutenant-colonel, Nathaniel L. Howard, division superintendent, Chicago, Burlington & Quincy, Hannibal,

Mo.; captain adjutant, R. D. Black, of the regular army; captain quartermaster, Francis W. Taylor; captain engineer, Thomas W. Fatherson, engineer maintenance of way of the Chicago Great Western, Des Moines, Iowa; major first battalion, C. L. Bent, inspector passenger train and station service, Illinois Central, Chicago; captain adjutant, W. G. Arn, assistant engineer maintenance of way, Illinois Central, Chicago. The captain of the Illinois Central company is John M. Walsh, terminal superintendent, Memphis, Tenn.; first lieutenant, F. P. Nash, general foreman of shops, Palestine, Ill.; first lieutenant, George T. Sheehan, yardmaster at New Orleans; second lieutenant, James W. Kern, Jr., supervisor, Mounds, Ill. The Chicago Great Western company has the following officers: Captain, Elmer E. Stoup, trainmaster, Des Moines, Iowa; first lieutenant, Sidney V. Rowland, assistant superintendent, Red Wing, Minn.; second lieutenant, R. W. LeBaron, examiner of joint facilities, Chicago. The captain of the Rock Island Lines company is Victor H. Hagelberger, trainmaster, Bureau, Ill.; first lieutenant, Frank Adelbert Parker, chief despatcher, Des Moines, Iowa; first lieutenant, Stephen E. Mueller, general foreman locomotive department, Cedar Rapids, Iowa; second lieutenant, William E. Haberlaw, roadmaster, Rock Island, Ill.

The major of the second battalion is Charles L. Whiting, superintendent northern Montana division, Chicago, Milwaukee & St. Paul, and the captain adjutant, Cassius E. Carson, superintendent Ft. Dodge, Des Moines & Southern, Boone, Iowa. The Chicago, Milwaukee & St. Paul company is officered as follows: Captain, Alexander Young, district master mechanic, Milwaukee, Wis.; first lieutenant, Thomas P. Horton, train despatcher at La Crosse, Wis.; first lieutenant, Frank T. Lee, locomotive engineer, Portage, Wis.; second lieutenant, Fred W. Sawtelle, roadmaster, Horicon, Wis. The captain of the Chicago & North Western company is Guy A. Holmes, assistant superintendent at East Clinton, Ill.; first lieutenant, E. H. Shaughnessy, trainmaster at Chicago; first lieutenant, Edward Schultz, master mechanic at Chicago; second lieutenant, Walter S. Johnston, chief train despatcher, South Pekin, Ill. The captain of the Santa Fe company is Leroy Overpeck, general yardmaster at Emporia, Kan.; first lieutenant, L. Fred Von Blucher, roundhouse foreman, Galveston, Tex.; first lieutenant, Grove C. Kennedy, chief despatcher, Beaumont, Tex.; second lieutenant, Sidney S. McConnell, clerk in the superintendent's office, Emporia, Kan.

NEW RAILROAD LAWS

The legislature of Minnesota has passed a law, House Bill No. 18, designed to restrain the courts and officers of the law from prosecuting members of labor unions. In substance it allows the ordinary powers of court and prosecuting attorneys to be exercised only where irreparable injury would be done to business or property.

The same legislature has amended the act of 1917, requiring prompt delivery of live stock by railroads, changing from six hours to five hours the time limit within which cars must be delivered at stockyards after arrival; and the territorial limit is changed from 15 miles to 20 miles from the terminal.

The Iowa legislature has passed a law, House Bill No. 381, providing for punishment of two or more persons conspiring to go on to a locomotive. Evidently this bill was designed to punish train robbers. It takes effect July 4 next. Another law, House Bill No. 382, going into effect July 4, provides for compulsion to require a new railroad, crossing an old one, to join in the installation of interlocking signals at crossings. The court is to prescribe the terms of construction and maintenance.

The legislature of Michigan has passed a law, Senate Bill No. 261, prohibiting trespassing on railroad right of way. An exception is made in the case of persons going on

the tracks to save persons or property, and an owner of land on both sides of the track may cross it, also any employees or members of his family. No penalty is prescribed.

The California legislature has passed a law, Senate Bill No. 438, making it unlawful for an employer to accept a gift for employing or continuing in employment any employee; penalty not over \$300 or imprisonment not over six months. The law goes into effect July 26 next. Another law gives the railroad commission power to prescribe the manner of installing grade crossings and to order the separation of grades where practicable, etc. Effective July 26, next.

The legislature of Colorado has extended the powers of the Public Utilities Commission, authorizing the commission, on its own motion, to require any public utility to maintain and operate its lines, etc., so as to promote and safeguard the health and safety of employees, passengers and the public; also to prescribe the manner in which tracks may cross a public highway or the tracks of another company. The commission also may order the relocation, alteration or abolition of grade crossings.

RECRUITING SUBSCRIBERS TO THE LIBERTY LOAN

The railways' campaign to recruit subscribers to the Liberty Loan is progressing with greater enthusiasm every day.

As noted in last week's issue the railways are subscribing to the bonds themselves, they are advertising the bonds to their patrons by means of posters at stations they are assisting their employees to buy bonds on the easy payment plan; and now they are advising such of their stockholders as have not already done so to climb on Uncle Sam's Liberty Loan band wagon.

Some of the railroads have enclosed with their June 1 dividends circulars or other notices urging subscriptions to the Liberty Loan. The Atchison, Topeka & Santa Fe notice says, "The immediate success of the Liberty Loan is of the highest importance to your country. If you have not already done so to the full extent of your ability, will you not at once subscribe to that extent?" Then follows information as to how the bonds may be obtained.

The Pennsylvania includes with its dividend checks a return post card addressed to the Liberty Loan committee of the Federal Reserve District of Philadelphia, which may be filled out and mailed as a request for full details about the bonds. It is headed, "Have you bought your Liberty Bond? Combine safe investing with patriotism and take as many United States Government 3½ per cent Liberty Bonds as you can. This is the safest investment in the world."

THE PARTIAL PAYMENT PLANS

The number of railroads that have announced the adoption of easy payment plans for their employees grows larger every day. The following table gives a list of a number of these roads and the scheme of payment each of them has adopted:

Name of Road	Scheme of Payment
Buffalo, Rochester & Pittsburgh.....	*Semi-monthly payments of 10 per cent of wages.
Delaware & Hudson.....	12 monthly payments.
Erie	12 monthly payments.
Kansas City Southern.....	24 semi-monthly payments.
Lehigh Valley	12 monthly payments.
Louisville & Nashville	12 monthly payments.
New York Central.....	*10 monthly payments.
New York, Chicago & St. Louis.....	Semi-monthly payments of 5 per cent of bond.
Norfolk & Western.....	10 monthly payments.
Pennsylvania	Four plans; see below.
Southern Railway	†12 monthly payments.
Southern Pacific	†4 per cent monthly.
Texas & Pacific.....	10 monthly payments.
Union Pacific	†10 per cent of monthly wages.

*Minimum payment \$5.

†Subscription not to exceed 25 per cent of yearly salary.

In most cases provision is made for a refund to the employee of his payments in case he leaves the service before

his bond has been fully paid. The Southern Railway, for example, says in its announcement that "In case a subscriber terminates his service with the company, the company, unless fully repaid within two months thereafter, for advances (including interest) made on subscription, will return to the subscriber the amounts theretofore deducted from salary payments, with interest thereon at the rate of 3½ per cent per annum."

WESTERN ROADS PUSH LIBERTY LOAN

The Chicago, Burlington & Quincy, the Illinois Central and the Nashville, Chattanooga & St. Louis have subscribed to the Liberty Loan in sums of \$5,000,000, \$1,000,000 and \$250,000, respectively. In addition, these roads and the Atchison, Topeka & Santa Fe, the Chicago & North Western and the Chicago, Milwaukee & St. Paul, have arranged to assist their employees in purchasing the bonds by deducting from the pay of employees desiring the bonds periodical installments until the deductions equal the amounts subscribed for, when the bonds will be delivered to the individual purchasers. The Burlington and the Santa Fe have also offered to refund payments with 3½ per cent interest if for any cause an employee leaves the service before paying for his bond in full. Circulars issued by the railroads point out the advantages of subscribing and urge investment in the loan by all employees as a patriotic duty. A characteristic statement of the compelling reasons for subscribing to the bonds is contained in the St. Paul circular: "As the United States Government has given more to, and received less from its citizens than any other government in the world, no citizen should hesitate to give as much money to the government as he can possibly spare; therefore, why not act quickly and generously in loaning it."

PENNSYLVANIA HAS FOUR PLANS

Some 200 officers of the Pennsylvania Railroad and its affiliated lines East of Pittsburgh and Erie held a meeting in Philadelphia May 29 at which final arrangements were made whereby every employee of the company will be given an opportunity to secure a Liberty Bond on easy payment terms.

Each station agent, as well as the treasurer of the Mutual Beneficial Association of the Pennsylvania Railroad Employees, has been authorized to receive applications and subscriptions for Liberty Bonds. A special form of receipt has been prepared and the employee will be given his choice of four methods of securing the bonds. These are as follows:

Plan A.—Subscriber may make full payment for the amount of bonds subscribed for at the time of application, or

Plan B.—May make an initial payment at the time of application and make monthly payments to any agent thereafter, until the full amount of subscription is paid, or

Plan C.—May make an initial payment at the time of application and authorize monthly deduction from wages, until the full amount of the subscription is paid, or

Plan D.—Subscriber may authorize deduction from wages for the full amount of subscription without making any initial payment.

The meeting was presided over by J. C. Johnson, superintendent of telegraph, who represented the operating department of the company. Short addresses were made by Vice-Presidents W. W. Atterbury, Henry Tatnall and A. J. County; J. P. Fahnestock, treasurer; W. A. Patton, assistant to President Samuel Rea; E. A. Stockton, deputy comptroller; A. D. Smith, president of the Cornwall & Lebanon, and J. W. Braddock, superintendent of the Susquehanna, Bloomsburg & Berwick.

B., R. & P FORMS COMMITTEES

In order that the work of securing subscriptions to the Liberty Loan among the employees of the Buffalo, Rochester & Pittsburgh, might be carried on in the most effective man-

ner, a meeting of representatives from the different classes of employees was held last Thursday at Rochester.

From each branch of the service individuals were selected who will devote much of their time for the next few days in bringing to the attention of their fellow employees the necessity for buying Liberty Bonds. J. F. Dinkey, auditor and treasurer of the company, who acted as chairman of the meeting, outlined very clearly the advantages to be derived from the purchase of the bonds and explained fully the company's plan by which the bonds may be purchased.

SUBSCRIPTIONS

In addition to the roads mentioned in last week's issue the following companies have subscribed to blocks of bonds for their own treasuries:

Baltimore & Ohio	\$1,000,000
Chicago, Burlington & Quincy.....	5,000,000
Illinois Central	1,000,000
Louisville & Nashville	1,000,000
Nashville, Chattanooga & St. Louis....	250,000

AMERICAN ELECTRIC RAILWAY ASSOCIATION

The American Electric Railway Association's Committee on National Defense, George H. Harries, chairman, has addressed an appeal to all electric railway companies asking for their co-operation.

"Electric railways generally," the appeal says, "have indicated their willingness to co-operate fully with our government in all matters pertaining to the conduct of the war.

"One of the best means of extending this co-operation just now is through any steps which will look to extensive participation in the Liberty Loan on the part of electric railway employees. As many of the electric railway employees may wish to 'do their bit' in this connection but might not be in a position to meet the payments under the government plan, the companies can assist by making it possible for them to acquire the war bonds upon some equitable plan of installment payments.

"Electric railway companies being large employers of labor are in a position through this means to take a prominent part in the distribution of the bonds and we believe that those companies which have not yet instituted the movement among their employees will welcome the opportunity to assume this patriotic duty. It is suggested that any plan adopted should be adequately presented to all employees, if possible at meetings held during company time."

A NATIONAL SERVICE

R. Goodwyn Rhett, of Charleston, S. C., president of the United States Chamber of Commerce, says that those employers who assist their employees to subscribe to the Liberty Loan in small weekly payments are performing a national service that cannot be overestimated.

"In the affairs of nations as in business," says Mr. Rhett, "principles must be honesty of heart and purpose. There can be no doubt that the United States in entering this war is reaffirming its fidelity to those principles. But a nation is no stronger than its weakest part. Each unit must perform its function. Without this our intentions will avail nothing and our efforts will be a mockery. I do not doubt for a moment that the business men of the United States will do their share.

"The Chamber of Commerce of the United States has pointed out to the merchants and manufacturers how they may become leaders in the success of the Liberty Loan, by making it possible for their employees to purchase the bonds by small weekly payments. The importance of such service to millions of employees who might not otherwise be enabled to purchase Liberty Loan Bonds cannot be overestimated. This is a national service. It makes the employer and worker co-operative participants in the patriotic service of financing the war."

The Pennsylvania's New Electric Locomotive

The Locomotive, Which Has Been Developed for Main Line Service, Involves Many Unique Features of Design

IN accordance with its well-known policy of carefully developing a standard unit before going ahead with the production of the total number of units required, the Pennsylvania has built an experimental electric locomotive with the idea of developing a standard electric locomotive for heavy main line service. In general the locomotive is somewhat similar to those used on the Elkhorn Grade electrification of the Norfolk & Western in that it uses three-phase motors, fed by a phase-converter connected to an 11,000-volt single-phase contact wire, it also uses the prin-

tact wire. The current is supplied to the primary of a static transformer which returns it to the track circuit and in so doing excites the secondary of the transformer from which the phase converter is operated. This phase converter changes the single phase current supplied to it by the transformer to three-phase current for the use of the traction motors. These motors, of which there are four, have a rating of 1,200 h. p. each, giving the locomotive a capacity of 4,800 h. p.

The three-phase current taken from the phase converter is supplied, through the necessary control switches, to the

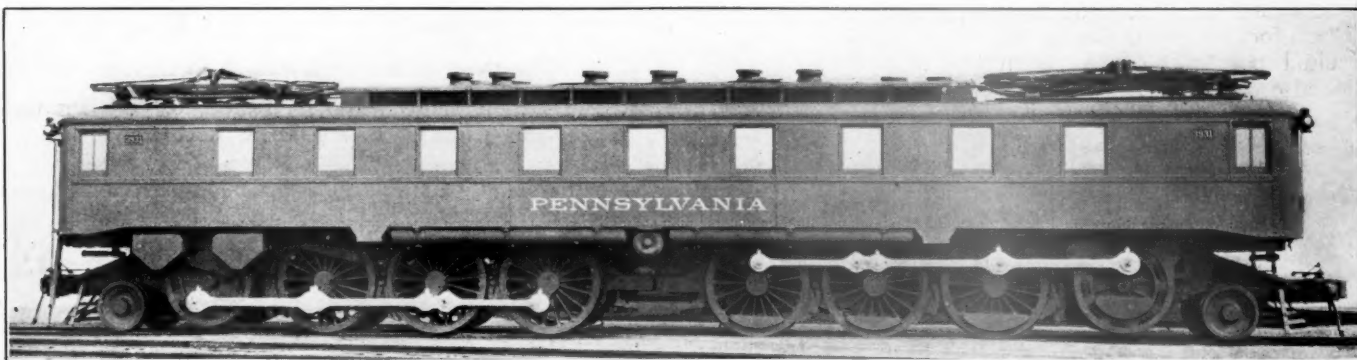


Fig. 1—The New Pennsylvania Electric Locomotive, Class F. F. 1.

ciple of transmitting the motor power to the drivers through regular standard side rods connected to a motor driven jack shaft.

Many of the important details, however, in the new locomotive are distinct departures from any previous design. The most unique feature of the locomotive is that instead of being made up of two cabs like those on the Norfolk & Western and the St. Paul, it consists of only one cab which rides on two articulated six-wheel driving trucks.

It is understood that the new locomotive has been devel-

oped for handling tonnage trains over the grade west of Altoona, Pa., known as the Altoona Hill. This hill consists of 24 miles of 1 per cent up-grade from Johnstown, Pa., on the main line east to the summit at Gallitzin and 12 miles of 2 per cent descending grade from the summit into Altoona. This slope contains the famous Horseshoe Curve. The locomotive will probably be sent to Paoli, Pa., this week for a preliminary trial on the Pennsylvania-Paoli 11,000-volt electrification.

The two motors which are mounted on each truck frame are geared to a jack shaft driving the driving wheels through connecting rods and the springs in the gears of these jack shafts are so adjusted as to give the effect of a solid gear up to a tractive effort equivalent to 25 per cent of the weight

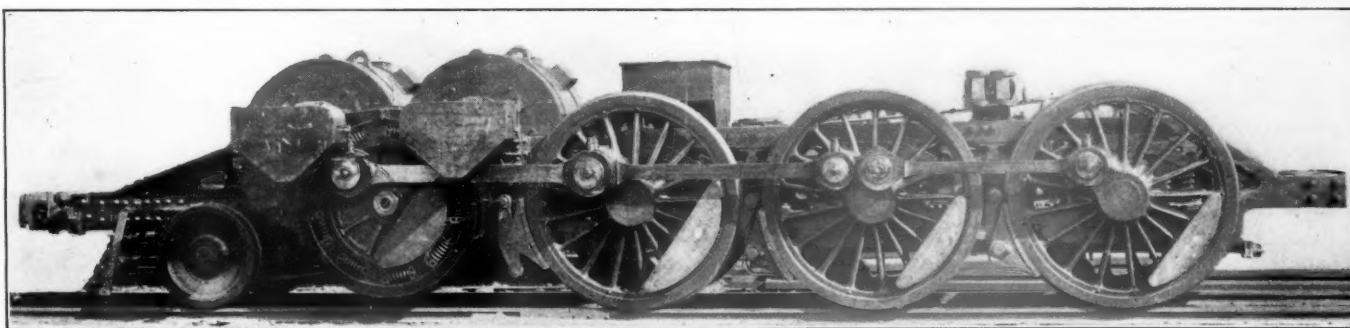


Fig. 2—One of the Two Driving Trucks Showing Motors and Spring Gear Jack Shaft

oped for handling tonnage trains over the grade west of Altoona, Pa., known as the Altoona Hill. This hill consists of 24 miles of 1 per cent up-grade from Johnstown, Pa., on the main line east to the summit at Gallitzin and 12 miles of 2 per cent descending grade from the summit into Altoona. This slope contains the famous Horseshoe Curve. The locomotive will probably be sent to Paoli, Pa., this week for a preliminary trial on the Pennsylvania-Paoli 11,000-volt electrification.

The locomotive is designed to operate on 11,000 volts, single-phase, 25-cycle current taken from an overhead con-

duct wire. Therefore, under all ordinary conditions the effect of a solid gear is obtained.

The locomotive has two operating speeds with possibilities of operating at any intermediate speed from zero to the maximum, by means of the rheostatic connections. The lowest of these speeds is 10.3 miles per hour and is obtained by connecting the motors on either truck in cascade with each other and in parallel with those on the other truck. It is contemplated to use this speed only in slow movements and around yards. The other speed of 20.6 miles per hour is obtained by connecting the motors on both trucks in parallel

and this is the speed at which the locomotive is designed to operate in road service and at which it gives a tractive effort of 87,200 lb.

The cab containing the electrical machinery is 72 ft. 6 in. long and 10 ft. wide over sheathing. It has two Z-shaped center girders 26 in. deep, made of plates and angles covered on top with a plate 6 ft. 1 1/8 in. wide, which forms the platform floor to which the electrical machinery is attached. The

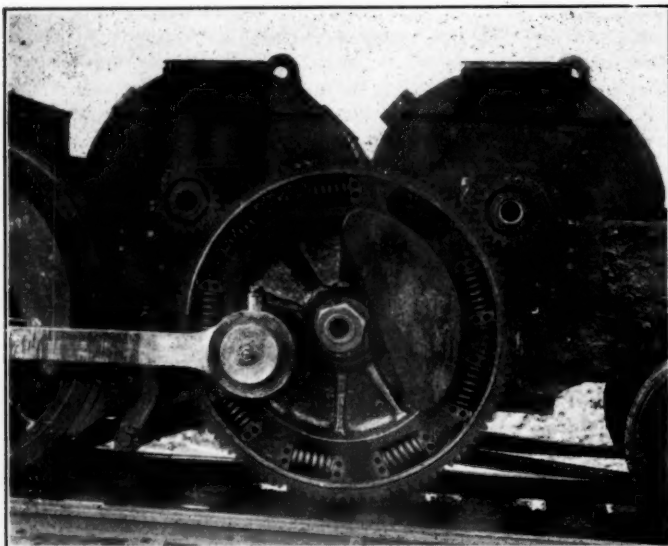


Fig. 4—A Close Up View of the Jack Shaft with Its Spring Gear Meshing with the Two Motor Pinions

side framing is of the same type as on Pennsylvania passenger cars, consisting of U-shaped posts bent at the top to support the lower roof deck and sheathed with 1/8-in. plates. The upper deck extends only over the central part of the cab for a length of 36 ft. 0 in., leaving a space at each end of cab for the pantographs.

To permit removal and replacing of electrical machinery the roof of the upper deck is removable and the turtle back decks at each end of cab are equipped with large hatches. No lining is provided for the body of the cab, but the motor-

and running gear is similar to those used for steam locomotives. The spring gear for each truck is of the three point suspension type, one point being over the pony truck and the other two points over each frame, consisting of equalizers over each box, elliptical springs between journals and helical springs outside of the first and third journals.

Brake shoes are provided for one side of each driver, the brake arrangement being of the usual steam locomotive type with two cylinders, each 16 in. in diameter, and located between the frames between the second and third axles. The train brake and locomotive brake can each be operated independent of the other. Above the frames and between the first pair of drivers is located a sand box with sand pipes leading to the front of the first pair of drivers and to the

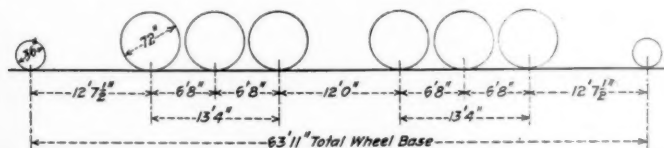


Fig. 5—Diagram Showing Wheel Spacing of the Pennsylvania Class F. F. 1 Electric Locomotive

rear of the third pair of drivers, and equipped with Leach double "E" sanders. The gear wheels have inward projections forming the jack shaft journals. The bearings therefore are solid bronze forced into a circular opening in the frame casting.

The center plate is located halfway between the first and second axle at an elevation of about the height of the top of frames. Between the second and third axles an auxiliary spring support has been applied for the purpose of equalizing the loads on the various drivers, which will counterbalance the excess weight due to the location of motors between the pony truck and first pair of drivers. The contact between the caps over these springs and the bottom surface of the cab must necessarily be a sliding contact.

Each motor truck includes a pony truck of the Pennsylvania Railroad type, with an elliptic spring located each side of the axle and supported on T-links. As the usual T-links alone will not provide sufficient lateral motion, a rocker casting supported by the elliptic springs has been added. The

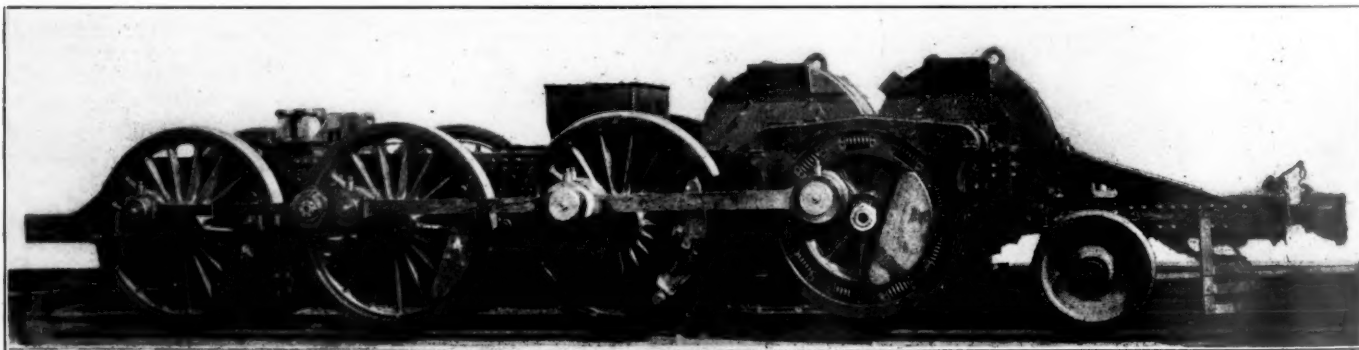


Fig. 3—The Other Driving Truck, Which Is Connected to the Truck Shown in Fig. 2 by an Articulated Joint

man's ends, which are separated from the main cab by partitions, are lined and insulated and provided with a resilient floor covering. For the protection of the motorman the ends of the cab are also provided with strong vertical members, similar to those used in Pennsylvania steel passenger and postal cars. Both sides for the full length of the upper deck are made in the form of louvres for ventilation.

Each truck is a motor truck, which receives power from two motors through a spring gear wheel on each side, mounted on a jack shaft. Each gear wheel is connected to the three drivers by the usual side rods and the remainder of the drive

combination T-links and rocker permit sufficient lateral motion for curves of 275 ft. radius. The articulation between the motor trucks is of a construction similar to a pedestal attached to the cab center sills. The lower ends of the pedestal legs are connected together with a tie bar. This permits each truck to rotate around the center of the center plate without restriction. All bearing surfaces in the articulation are plated with manganese steel. The pulling and pushing strains between drawbars carry through the trucks and articulation in a direct plane 34 1/2 in. above the rails so that the cab is entirely relieved of these strains.

The principal characteristics of the locomotive are:

Railroad classification	FF1
Overall length	76 ft. 6 1/4 in.
Total wheelbase	63 ft. 11 in.
Driving wheelbase	38 ft. 8 in.
Rigid wheelbase	13 ft. 4 in.
Height from rail to locked position of pantagraph	15 ft. 6 in.
Height from rail to top of cab	14 ft. 8 in.
Width over cab body	10 ft. 0 in.
Overall width	10 ft. 1 in.
Diameter of driving wheels	72 in.
Diameter of pony wheels	36 in.
Weight on drivers	198 tons
Number of driving axles	6
Weight on each pony truck	21 tons
Total weight of locomotive	240 tons
Voltage of locomotive	11,000
Tractive effort at hourly rating of motors	87,200 lb.
Speed	20.6 m.p.h.
Capacity of locomotive—one-hour rating	4800 h.p.

RATE ADVANCE HEARING

Testimony on behalf of the representatives of the state railroad and public service commissions that are protesting against the proposed 15 per cent advance in freight rates was presented before the Interstate Commerce Commission on May 31 and June 1. At the request of the railroad lawyers, a list of the state commissions represented among the protestants was filed showing that the witnesses appeared for the commissions of Minnesota, North and South Dakota, Iowa, Nebraska, Kansas, Washington, Oregon and Idaho. H. B. Warren presented general statistical testimony on behalf of the commissions and was followed by Prof. J. P. Norton of Yale University, who filed an exhibit bringing up to 1916 exhibits he had filed in the western freight and passenger rate advance cases in 1915 for the purpose of showing that railroad credit as indicated by the average yields on bonds and stock is better than that indicated by other securities. The exhibits were confined to a selected list of what he called representative western railroads. In the previous cases figures had been given for the years 1900-1914, and in this case figures had been added for 1915-1916. He declared that the credit of these roads was better in 1916 than in 1914 because the average yield had declined from 4.6 to 4.5 per cent. From 1900 to 1916 the yield had increased from 4.2 to 4.5, or 7 per cent. Another exhibit gave similar figures for the bonds of 17 municipalities on which the yield had increased 25 per cent since 1900. From this he argued that the railroads had improved in credit as compared with the municipalities. Another exhibit gave average quotations of the common stock of 11 railroads showing that they had advanced in price from 85.2 in 1900 to 114.6 in 1916, or 35 per cent. The prices shown for 1916 were substantially equal to those of 1914, although it was shown on cross-examination that present quotations on these stocks are far below those for 1916.

U. G. Powell, rate expert and accountant for the Nebraska commission, filed an elaborate exhibit, which he declared showed that the western railroads were less in need of an advance than either the eastern or the southern roads and that if they did need an advance it should be obtained from passenger traffic rather than from freight traffic. Mr. Powell had separated the freight and passenger expenses and showed that while the average revenue per ton per mile in the western district was higher than in the eastern or southern districts, the net return from freight traffic on the book cost of road and equipment was 6.68 per cent as against 5.95 per cent for the east and 6.48 per cent for the south. His exhibit showed that on passenger traffic the net return for the western district was 3.31 per cent against 3.81 for the south and 5.11 per cent for the east, although it showed a net return for combined freight and passenger traffic for the western district less than for the east or south. The combined net return was 5.59 per cent for the west, 5.78 for the south and 5.72 for the east. In figuring his cost of road and equipment, however, Mr. Powell deducted for depreciation reserves and appropriations from income. He also pro-

duced a number of exhibits for the purpose of showing that the increase in expenses attributable to the Adamson law may not be as great as estimated by the railroads.

At the conclusion of the evidence presented on behalf of the state commissions a number of representatives of individual shippers testified regarding conditions in their industries which they contended should exempt them from a general increase or which would subject them to a disadvantage compared with other shippers if a horizontal percentage advance were allowed. Among the industries represented were cement, plaster, canned goods, hops, leather, citrus fruit, lumber and automobiles. A. C. Dixon, chairman of the rate committee of the West Coast Lumber Association, said that the rates on lumber had already been increased and that the shippers represented by this association already have on their books over 1,000 carloads of lumber which they have been unable to ship on account of the car shortage and on which they will have to pay the freight rate because their contracts are on the basis of delivered prices.

A number of representatives of the canning industry protested against any advance on the ground that the industry is not sufficiently prosperous to warrant it, but particularly because they have sold their year's output at delivered prices based on the present freight rates. They, therefore, contended that any increase which may be allowed should not become effective before January 1. Z. T. George appeared for the California Canning Company and W. H. Sears for the Sears-Nichols Canning Company. Mr. Sears said the bulk of his output for the year had been contracted for in January and February and that a 15 per cent advance in freight rates would cost his company \$12,882. He said if the advance were not made effective until January 1 it could be added to the prices. He also thought that any advance should be postponed until after the Interstate Commerce Commission's valuation of the railroads is completed. Commissioner Clark asked if he thought the fact that he had made contracts on the basis of present freight rates was a valid objection to any change in rates in view of a law providing that carriers may change rates on 30 days' notice. He said competition was so keen in the canning business that the wholesalers were able to force such contracts. He said the canners were not in a prosperous condition and that his company had not paid a dividend for five years, although it had once paid a 60 per cent dividend. Martin Van Persyn, manager of the traffic department of Sprague, Warner & Co., said he would not be strongly opposed to an advance in rates if the railroads would use the money to improve their service, but that any advance should be postponed until shippers' existing contracts are filled.

George J. Bradley, on behalf of the hops industry of the Pacific Coast, presented a doleful tale of the critical condition of this industry because of the rapid increase in prohibition territory. He said the producers had been unable to dispose of their entire 1916 crop and that the acreage had been greatly reduced in 1917. H. M. Wade, of San Francisco, appeared on behalf of the Pacific Coast Tanners' Association, saying the tanners had no objection to an increase in rates if the commission finds it necessary, but that they protested against a horizontal percentage increase because it would increase their differential over the rates of their eastern competitors.

On June 2 two "actual, bona fide" farmers from North Dakota were placed on the stand on behalf of the shippers, who testified that the farmer, instead of rolling in wealth, is losing money even at this time of high prices for food products. Asked by Luther M. Walter what was the average income of a farmer in that district for the last few years, one of the farmers said that it has usually been more notes in the bank at the end of the year. Figures were given to show the poor crop yield in several recent years because of rust or unfavorable weather conditions and it was testified that

it actually cost to raise wheat last year about \$2 a bushel, whereas the farmers had received an average of only \$1.30. A man who said he had the reputation of being the best farmer in his county said he had made no money in six or seven years except \$400 which he had made by speculating and which he promptly invested in a Ford. He stated that everything used on the farm has increased in cost; labor formerly paid \$25 to \$35 a month now demands \$45 to \$50.

The general presentation to be made by Messrs. Thorne, Walter and Cary on behalf of the National Shippers' Conference was postponed until Tuesday because the exhibits were not ready, and the day was occupied by additional representatives of different industries. W. E. McEwen, representing the Western Petroleum Association, protested that a horizontal advance in rates would affect the independent producers and refiners operating in the mid-continent territory adversely in competition with the Standard Oil interests because the latter use pipe lines and have much smaller freight haul to pay for. Mr. McEwen stated that the interests he represents ship approximately 40,000,000 barrels per year and pay \$32,000,000 in freight charges. The proposed advance in rates would, therefore, amount to about \$5,000,000 and he figured that the independent refiners would have to absorb approximately 2 cents per gallon as the difference between the increased freight rate on the independent product and the freight rate that would be paid by the Standard Oil Company of Indiana because of its shorter rail haul. He said that the petroleum industry is now standing more than its proportion of transportation charges and should not be further taxed. S. H. Cowan of Fort Worth, Texas, appeared on behalf of the Texas Industrial Traffic League and southwestern live stock shippers.

A. M. Mortensen testified on behalf of the California Fruit Growers' Exchange, protesting especially against a horizontal percentage advance in rates. He testified that the citrus fruit industry as a whole was not especially prosperous, that the return on the investment during the last five years had averaged only 4.6 per cent. He testified also that an increase in freight rates could not be passed on to the consumer because the price of oranges and lemons depends on market conditions, weather, regularity of shipment, etc., and is fixed by the buyer rather than by the seller. He said that the price received by the grower had fallen off since the war because people are economizing and there is less demand for fruit.

Mr. Cowan testified that the proposed increased freight rate on live stock would amount to between \$8,000,000 and \$9,000,000 which would be added to the meat bill of the country.

The hearing on Tuesday was devoted to presentation of evidence on behalf of the National Shippers' Conference, with Clifford Thorne as the principal witness. Mr. Thorne occupied most of the day presenting a score or more of elaborate detailed exhibits of statistics to show that the present situation of the carriers does not constitute an emergency and that the commission should not grant an increase without an exhaustive investigation. Mr. Thorne devoted especial attention to the exhibits of the railways showing increased cost of materials and supplies and also a compilation of similar figures prepared by an examiner of the commission in the Lake cargo coal case, showing an average increase of 49 per cent over the prices of last year, which would amount to 15 to 18 per cent of the freight earnings. Mr. Thorne criticized these figures because he said both the railroads and the commission's examiner had used quotations, whereas the actual prices being paid by the railroads at the time were in many cases less than these quotations, due to overlapping contracts. He also criticized the exhibits of the railroads showing coal prices which gave the latest current prices or quotations, whereas in some cases the roads had already purchased a part of their supplies for this year at lower prices. The railroads had shown what their expenses

would be for a year, based on current prices, and their witnesses had themselves testified that in many cases they were still receiving the benefit of previous contracts. One of Mr. Thorne's exhibits was entitled "Prophecies of Former Days" in which he had contrasted former statements of railway executives with subsequent developments. He said it had been impossible to make a complete analysis of the capitalization of all roads in the time available so he had selected the New York, New Haven & Hartford as an example. He had exhibits similar to those he had introduced in previous cases showing increases in maintenance charges. In an analysis of railway earnings and expenses by months he said that there was a sudden drop in net earnings in February which were being reported about the time the railroads announced their intention of asking for an increase in rates, caused largely by the severe weather conditions and the congestion on the eastern roads. March, he said, had shown a great increase over February. He also had a compilation of the directors of American railways from which by eliminating the minority interests he deduced that 350 men actually control the railroads of the country.

Charles Reittel, an instructor at the University of Pennsylvania, and also connected with the Utilities Bureau, of Philadelphia, presented a chart giving an analysis of the intercorporate relations of the New York Central System. Among the companies with which the New York Central had some connection, according to his chart, were included 170 industrials. This was introduced, he said, for the purpose of showing the close relations between the railroads and the companies that have increased the prices of their supplies.

Frank L. King of the University of Pennsylvania, presented some exhibits to show the reductions in rates of various public utilities.

W. R. Stubbs, former governor of Kansas, testified for about five minutes to give the commission the benefit of his opinion that the railroads are going to have a better year in 1917 than they ever had before, because of the tremendous increase in their traffic and that they will, therefore, have "money to burn this year." He thought the government ought to compel the railroads to carry full trainloads of passengers as well as of freight. He opposed an increase of freight rates on the ground that it would impose "a serious burden on millions of consumers who now do not have enough to eat and to wear," and thought that the railroad stock and bondholders were better fixed to stand any burden which might be imposed by war conditions than any one else. Mr. Stubbs volunteered to return the next day for cross-examination, but the railroad counsel stated that it would be unnecessary.

In order to enable the commission to complete the hearings on the schedule which had been arranged, a separate hearing was held, at which a large number of representatives of different industries testified, before Examiner-Attorney George N. Brown. The hearings before Examiner Brown lasted from May 30 until June 5.

John M. Glenn, secretary of the Illinois Manufacturers' Association, was one of the witnesses before the examiner and said in part:

"We have been before this commission, on a number of occasions opposing freight rate advances. We want you to grant the pending request of the railroads, and we want you to grant it quickly, not because we are convinced of the equity of the request—for we do not know if it is equitable—or because we have figured out the problem confronting you and have the facts (for we have not)—but because we are afraid, in fact, we know, that if we do not get transportation, many industrial plants will be seriously crippled.

"We are confronted with an abnormal situation. To use the parlance of the street, more manufacturers came nearer 'going broke' last winter than is generally supposed. We are just as selfish as any other interest, and just as anxious to make more, as are our friends, the farmers, and we are just as patriotic too, but we have not our heads in the sand.

We know we must have cars and the necessary facilities, or chaos will reign.

"It does not take an expert accountant to tell us something is the matter, and that the chief cause is a lack of equipment, and that no railroad can get equipment without money. We are not doing business the same way in which we transacted it 20 years ago, or 10 years ago, or even 5 years ago, and those who realize that our country is engaged in a world war, know it. We must meet the situation and we must meet it quickly and not quibble, or we are gone. Grant the increase now and quarrel afterwards about whether it is too much or not. Let us help our country to get prepared for the contest. The Illinois Manufacturers' Association has been consistent in advocating preparedness ever since the war broke out in Europe, and over a year before war was declared by our distinguished President, we held a conference in Washington with the members of the Illinois delegation in Congress for the sole purpose of emphasizing the importance of getting ready and agitating preparedness. If we are going to wait until this question is sifted to the bottom before our transportation lines are put in shape we will create a delay which will clog the wheels and bring certain ruin.

"There are some things that are self-evident, and one is that the transportation companies can not meet the constant increases in expenses without a corresponding increase in revenue. No industry could live if prices and compensation had not been increased. We are not on the same level on which we were before the war started. Does any one suppose that we can back up the Allies if we have not the facilities to get our products to the seaboard? Our government has undertaken the tremendous task of bridging the great Atlantic with wooden ships and has placed at the head of this titanic task one of our greatest engineers and soldiers. Of what value will all the expenditure be if we cannot reach the docks with our munitions, manufactured goods and products of the soil?

"The reply may be made we can do this on present rates if the railroads are managed economically; but how does any one know this? A congestion has confronted the shipping public during the past six months such as was never before known. Will any one deny that statement? Is not transportation one of the main factors in the conduct of the war? What does it matter if we have all the munitions and food in the world and can not move it to the places where it is needed? It is like having all the wealth in the world and losing one's soul.

"Compared with the big things our government is doing the \$300,000,000 which the opponents of this proposed advance say an increase of 15 per cent will raise seems small. I saw a statement made by learned counsel on the other side a few days ago that the net earnings of the carriers for the last six months of 1916 amounted to \$698,336,000. Why, the increase in the value of the corn crop in the United States for 1916 over 1915 was \$563,000,000, and as to potatoes \$195,071,000. Those two products of the farm had a net value over the profits of the previous year of more than the net earnings of the carriers for six months, and the profits of the corn and potato crops of 1915 were indeed handsome.

"The excess profits in 1916 over 1915 on six products were as follows:

Corn	\$563,103,000
Wheat	145,762,000
Oats	96,673,000
Potatoes	195,071,000
Hay	95,250,000
Cotton	475,388,000
Total	\$1,571,247,000

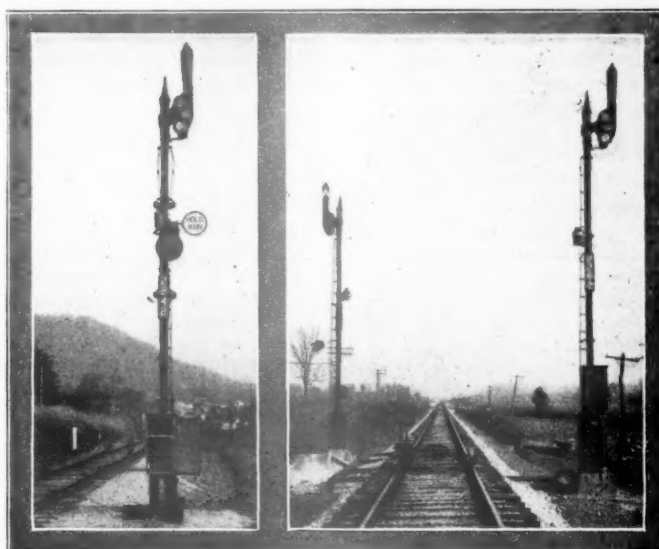
"Our people have faith in the judgment and wisdom of this commission. We believe in you and your patriotism. We have commissions in different belligerent countries reconstructing their railroads. Can it be that we do not know how to operate our own line?

"We know you will do the big thing."

The Committee on Valuation of Railroads, of which John J. Hopper is chairman, has addressed a letter to the President and to members of Congress asking an active effort to adjust the railroad situation so as to preclude the granting of the proposed 15 per cent advance in freight rates at least until there has been consultation between the Interstate Commerce Commission and the Federal Trade Commission with reference to reducing the prices now charged the railroads for coal, rails, oil and other products. The letter also declared that it is inappropriate that even an application for an increase in rates shall be made until the valuation of the railroads shall be completed, which, the letter says, "will probably be about the first of next year."

"HOLD-MAIN" SIGNALS ON THE L. & N.

The Louisville & Nashville despatchers in their office at Knoxville, Tenn., can indicate by semaphore signals to trains approaching Lafollette, a point 53 miles north of Knoxville, when they are to take siding, and when to continue along the main track and get train orders from the station operator. This is accomplished by an interesting installation recently made, comprising two "hold-main" signals at Lafollette and control circuits extending to Knoxville. This division of the road extends from Corbin, Ky., southward



The Northbound
Hold-Main Signal
at Lafollette

Double Signal Location South
of Lafollette with Housing
for "Answer Back"
Selector

to Etowah, Tenn., 166 miles; and the locations of the stations with which this article deals are as follows:

Corbin	0 miles
Lafollette	52 "
Knoxville	105 "
Etowah	166 "

The single-track line on both sides of Lafollette is equipped with automatic block signals. From Corbin to Lafollette is an installation made in 1912 in which the overlap style of control is used. From Lafollette south to Etowah, the "absolute permissive" scheme of control has recently been put in service. The line from Corbin to Etowah is handled by two despatchers, both located in the same office at Knoxville, one having the territory north of Lafollette and one that south of Lafollette. On the northern section there are many mine tracks, making it a heavy job for one despatcher, while on the other section, although covering a distance of 113 miles, the traffic is not so dense, except within the limits of Knoxville.

The track and signal layout in the vicinity of Lafollette

is shown in the drawing. In the past it has been the rule that all second-class and inferior trains approaching this station should take the siding. Since the installation of the "hold-main" signals, the rule is that all second-class and inferior trains approaching Lafollette and observing this signal to indicate "hold-main" will hold the main track; that is to say, they will continue along the main track; and when it does not display "hold-main," they will take the siding.

Following are extracts from the time table rules relative to the "hold-main" signals:

Movements at Lafollette.

All second-class and inferior trains, in both directions, will take siding unless signal to "hold-main" is displayed. Trains taking siding must stop at a point not less than one rail length from switch point until switch is opened.

"Hold-main" signals do not govern, nor affect the rights of, first-class trains.

Second-class and inferior trains, receiving "hold-main" indication will proceed to train order office against, or ahead of, superior trains without orders. After receiving orders they will be governed by Rules 86, 87 and 89, with regard to first-class trains, but will hold the main against second-class and inferior trains to be met at Lafollette.

After complying with Rule 90f Block Rule 514a, trains may enter the main track through the cross-over when no trains are to be met.

"Hold-main" signals do not in any way modify or supersede automatic block rules, nor dispense with the proper observance of automatic block signals.

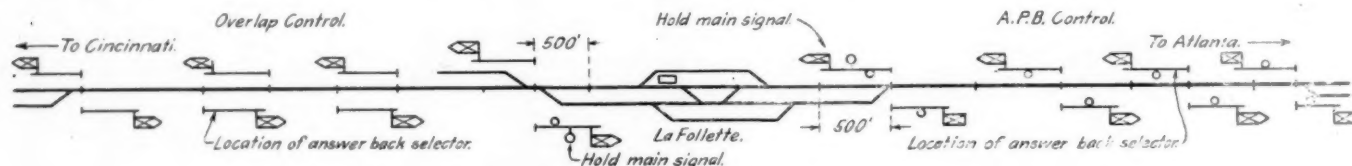
Trains receiving "hold-main" indication must use the main and flag through the block when automatic signals indicate stop.

Train orders Corbin to Lafollette will be numbered consecutively each day, beginning with No. 1 at midnight, and Lafollette to Etowah consecutively, beginning with No. 201.

The "hold-main" signals are of the General Railway Signal Company's model 2A type, and are clamped to the masts of the north and southbound entering automatic signals. The southbound signal is controlled by the dispatcher whose ter-

the approach of a train two miles out from the "hold-main" signal. The sixth key is designed to set all selectors normal before any other keys are used, but it has been found that this key is not necessary. There is a disk indicator attached to the first three keys to show which key was operated last, the color of the disk corresponding to the color of the key with which it operates. When a train passes the signal, the signal automatically goes to the clear or non-indicating position and cannot be operated again to display the "hold-main" indication for a following train until the first train has cleared the 500-ft. track section beyond the signal. When one train has cleared this track section after accepting the "hold-main" signal, it is possible for the dispatcher controlling the signal for trains coming from the opposite direction to set his signal in the indicating position and allow a train to approach on the main track to meet the other train. For this reason, dispatchers are instructed to consult each other before displaying the "hold-main" signal. The automatic signals govern, however, and a flag must precede the train.

In addition to the use of these signals for trains meeting, it is found that they are of convenience in passing one train around another. In the case of a train running in two sections, when the dispatcher wishes to allow the second section to pass the first, he must have an indication when the first section has cleared the main track so that he can set the "hold-main" signal for the second train. In making this move the dispatcher turns his blue key, which operates the selector at the "hold-main" signal. This picks up the OS relay which is held up through the front point of the track relay and a normally closed contact on the selector. With this operation of the OS relay, the "answer-back"



Track and Signal Layout in the Vicinity of Lafollette, Louisville & Nashville

To the left, North; to the right, South.

ritory lies south of Lafollette, and the north-bound signal, by the dispatcher whose territory is north of Lafollette. At the second double signal location each way from Lafollette, which is about $2\frac{1}{2}$ miles from the "hold-main" signal, there is placed an OS selector, to announce automatically to the dispatcher the approach of trains in sufficient time to enable him to display the "hold-main" signal. There is also a short track circuit 500 ft. long ahead of each "hold-main" signal by means of which an audible indication is given to the dispatcher when the train has passed the signal. This indication is given in the dispatcher's receiver by means of an "answer-back" selector operated by the track relay of the short track circuit, which gives a predetermined number of impulses in the dispatcher's circuit. The "hold-main" signals, with the "answer-back" and OS feature, are controlled over two wires of the dispatcher's circuit. The selectors are of special design furnished by the General Railway Signal Company.

For the control of these signals, there is a cabinet containing six keys located over each dispatcher's desk, directly over the telephone despatching keys. One key, colored red, is to set the signal in the indicating position, and one key, colored green, is to clear the signal, i. e., set it in the non-indicating position. Another key, which is blue, is used to set the OS or "answer-back" selector so that the dispatcher will get an indication when the train passes the signal. The fourth key, which is black, is to stop all OS indications coming in from the signal when a train passes it. The fifth key, also black, is to stop OS indications which show

mechanism operates, giving the dispatcher two indications, and then stops. The first section of the train approaching this signal and finding it in the normal position proceeds to enter the side track. In opening the switch to take siding the track relay is dropped, breaking the stick circuit of the OS relay. This causes that relay to release, starting the "answer-back" mechanism, which again gives the dispatcher two indications, signifying to him that the train has either passed through the 500-ft. track circuit ahead of the signal or has entered the side track, and the position is checked by turning the green key. The indication then will be 1-4 or 2-4, depending on the dispatcher's circuit. It is possible to make this check as often as desired and the position of the signal is not affected in so doing.

If the dispatcher should, for any reason, wish to break down the OS condition after it has once been set up, so that the "hold-main" signal can be displayed, he would turn the black key, which is the stop key, located to the right of the blue key. This operation of the stop key operates the selector, breaking the stick circuit of the OS relay. The OS relay now being down, he can turn his red key to display the signal in the indicating or "hold-main" position. The circuit is so arranged that when the relay which controls the signal is energized, the OS relay cannot be energized, and vice versa; which means that when the signal is indicating "hold-main," it is impossible to set up the OS condition, and vice versa.

We are indebted for the above information to F. H. Bagley, assistant signal engineer of the Louisville & Nashville.

General News Department

Governor Whitman, of New York, has vetoed a bill, which had been passed by the legislature, which was designed to empower the State Industrial Commission to suspend, during the war, the laws of the State limiting the hours of labor of women and children.

At Louisville, Ky., recently, two suits were filed against the Illinois Central by brakemen who had been formerly employed as porters. In both cases it was alleged that they had been employed as porters at \$41 a month, and later assigned to braking, which should pay \$75 a month. Both suits were for recovery of the difference in the pay. Many suits of this kind have been entered in the courts in that region during the past few months.

Some idea of the volume of clerical business necessitated in the conduct of the affairs of a large railroad is indicated by a news item stating that the Southern Pacific is now engaged in moving approximately 1,000 tons of records in San Francisco. The records are being removed from the city freight terminal to a three-story fireproof building at Mission and Spear streets. F. W. Pope, auditor of freight accounts of the Southern Pacific, is alone responsible for 400 tons of files. His department turns out 1,100 bound books and bundles monthly. The California Railroad Commission requires that all documentary matter relating to transportation be preserved for a certain length of time and some of it indefinitely.

The New York legislature has put a stop to the building of the proposed railroad bridge across the Hudson river at Castle-ton, ten miles south of Albany, a bill having been passed, and signed by the governor, requiring the bridge to be built in a single span. Such a bridge would cost several millions of dollars more than one of two spans, and the railroad company is understood to have declared the cost of a single-span prohibitory. The War Department had approved the two-span bridge, but the law passed at Albany is understood to have been carried through by business interests in that city, which are said to fear that the pier, set between the two channels, as would be necessary for the two-span bridge, would work an injury to the commerce of Albany.

G. H. Hunt, freight claim agent of the Chicago Great Western, has addressed an appeal to employees of the railroad to do their utmost to prevent loss and damage claims. He said in part: "Are you an American? Are you loyal to your country and your flag? Do you realize that our success and the success of our allies in the war depends in a large measure on the production and conservation of supplies in this country? Our President has appealed to every loyal American to assist in production and conservation. Do you realize that if through your efforts the loss of a bushel of grain can be prevented, you have done your bit as much as though you raised the grain in direct response to the President's call? The same may be said for any other loss or damage prevented or minimized. You may not be able to join the armed forces, but you can just as surely do your part here at home. Think it over—protect the freight in transit."

The Tanana Valley Railroad

It is announced at the Department of the Interior, at Washington, that the government is to buy the Tanana Valley Railroad in Alaska. This road extends from Fairbanks northward to Chatanika, about 20 miles, with a short branch. Fairbanks is the northern terminus of the railroad from Cook Inlet, now being built by the government.

Daylight Saving Bill

The daylight saving bill has been reported favorably by the committee of the United States Senate, but with the addition of a clause to the effect that the plan shall not go into effect until next year. In Springfield, Mass., there is a movement to adopt the daylight saving plan this year, but the Central Labor

Union has voted unanimously to oppose the movement. The labor leaders fear that the change would afford opportunity for much overtime work and "countless abuses."

It is announced at Ottawa that the Canadian Government will order all clocks set one hour ahead for the present summer, the order to take effect at an early date, soon to be announced.

New York City Subways

The Seventh avenue subway has now been partially completed for a large portion of its length, and trains are running from Forty-second street southward, eight blocks, to within about 200 feet of the Pennsylvania station at Thirty-third street and Seventh avenue. At Forty-second street—Times Square station—passengers connect to and from the old or "First" subway, and free transfers are given from one line to the other.

The Jerome avenue line, part subway and part elevated, has been opened for a short distance northward from 149th street and Mott avenue.

New York Central Freight Terminals in New York City

The legislature of New York has passed, and the governor has signed a law forbidding the execution of the proposed contract between the New York Central Railroad and the City of New York looking to extensive improvements, costing fifty million dollars or more, in the double track freight line of the road from Spuyten Duyvil, southward, on the west side of Manhattan, and the freight yards and terminals in the southern part of the city. The new law requires the city to submit its proposals to the Public Service Commission of the state (first district). The contract which has been drafted has been approved by the Chamber of Commerce of the state and the Merchants' Association of New York City, but strong local interests have opposed it, a principal objection being the claim that Riverside Park will be damaged and the beauty of the city irretrievably impaired. A law has also been passed providing for a new investigation by an outside committee; and it is supposed that long delays will now ensue.

Increases in Wages

The Atlantic Coast Line has made increases in pay, ranging from 8 per cent to 12 per cent, for substantially all classes of employees except those belonging to unions, with which formal agreements have been made, and also excepting employees who have had their pay raised since the beginning of 1917.

The Louisville & Nashville has made a general increase in the pay of shop men, said to affect 8,000 men; and for most of these men the workday has been reduced from nine hours to eight hours. The pay of machinists and boilermakers has been increased from 42 cents an hour to 48 cents.

The Nashville, Chattanooga & St. Louis has increased the pay of shopmen on a basis substantially the same as that which has been announced by the Louisville & Nashville.

It is announced at Paducah, Ky., that the shopmen of the Illinois Central, and also those of the Yazoo & Mississippi Valley, have received an advance in pay amounting to 1½ cents an hour.

The Canadian Pacific has advanced the pay of shopmen 6 cents an hour, the increase being granted to all employees belonging to the federated unions. According to a statement in a Montreal paper, several hundred women are included in this advance. This road increased the pay of trainmen last month.

The Canadian Northern has increased the pay of shopmen throughout the company's lines. It is said that the rates on all divisions, from Lake Superior to the Pacific Coast, are now uniform, the increases west of Winnipeg being less than those east of that point.

The Chicago & Alton has granted an increase in pay of twenty-five cents a day to all section men employed in the Chicago terminal district and between Joliet and Chicago. The men

formerly received \$2 a day and now receive \$2.25. On a large proportion of the lines east of St. Louis increases from \$1.90 a day to \$2 a day were also granted, effective June 1.

Representatives of Security Holders to Be Heard in Rate Case

The National Association of Owners of Railroad Securities, which was organized at a conference of railroad security owners held in Baltimore on May 23, was to be given a hearing by the Interstate Commerce Commission on Friday, June 8, in connection with the rate case. An organization committee of 80 prominent owners of railroad securities from 35 cities of the country was named by the conference. President Warfield was authorized to arrange a hearing before the Interstate Commerce Commission and appoint representatives to appear, also to appoint counsel. In his letter to the Interstate Commerce Commission requesting the hearing Mr. Warfield said:

"It is proper to call your attention to the fact that this association is very largely composed (and this will be greatly extended) of owners of millions of dollars of bonds and other evidences of debt of the carriers apart from stocks, and who up to this time have not been in position to have organized representation. While stockholders of carriers, who have representation through the carriers are also members, and while it is equally true that many stockholders are also bondholders, approximately three-fifths of the total capital of the carriers is represented by bonds and other evidences of debt, and the same proportion would maintain in the membership of this organization. The association bears much the same relation to the subject now before your honorable commission as do the shippers. The shippers feel concerned regarding the increased cost to them for hauling their goods. Those represented by this association, and who have furnished the money to haul these goods, are also concerned, and perhaps more so. The goods which are hauled belonging to the shippers are sold by them at unrestricted prices fixed by the shippers, whereas the prices charged by the carriers for hauling such goods in which is used money derived from the sale of railroad securities now owned largely by those represented in the membership of this association, we beg to submit, are made by you and they should be. This association represents the channels of the country through which are supplied to the carriers in the aggregate vast sums of money, made possible by the 50,000,000 people who personally or through their life insurance policies, their deposits in the savings banks, and through other channels, in the final analysis, furnish to the institutions the money to buy the securities of the railroads. A great public and economic question is being solved. We feel, therefore, entitled to be heard independently of the carriers' presentation of their case and as representing a most important element entering into the subject under consideration."

The following were to appear before the commission on behalf of the association: Darwin P. Kingsley, New York, president, New York Life Insurance Company; H. A. Schenck, New York, president, The Bowery Savings Bank, and president Savings Banks Association of the State of New York; John E. Oldham, Boston, of Messrs. Merrill, Oldham & Co., who is the author of many articles on railroad financial matters, and Robert F. Maddox, Atlanta, Ga., president, Atlanta National Bank. Frank Hagerman, of Kansas City, Mo., is counsel for the association.

A Bit of History

The true significance of what the Erie canal did for New York is not comprised in a cataloguing of its effect upon the number of our ocean and inland transportation lines, our trade, our industry, our finance. The old Erie canal barge introduced a system of terminal operations in New York which is one of our greatest assets. The canal forced upon the railroads the present system of lighterage in the port, and the practice of absorbing the cost of that lighterage into the flat New York rate.

The canal barge could equally well deliver freight at any point along the shores of lower Manhattan, or on the adjacent shores of New Jersey, Staten Island, Brooklyn, or the Bronx. When the railroads came upon the scene they had to meet this situation. They also had to deliver, at the flat New York rate, anywhere within "lighterage limits" fixed by the canal barges. Later the railroads improved upon the system, in some cases, by towing cars, standing on car floats, and unloading them upon piers in Manhattan. The canal barge charged nothing extra for this

choice of deliveries and the railroad could not. The geographical disadvantage which New York possessed, in its insular location, was transformed into a commercial advantage of the first order. —New York Mail.

The Liberty Loan Committee on Railroads

Subscriptions to the Liberty Loan to the amount of no less than \$26,499,650 by railroads and their employees were announced as having been reported up to Wednesday night to the Liberty Loan Committee of Railroads, of which A. H. Smith, president of the New York Central, is chairman.

Even with that large amount, the committee announces that the figures received by the committee are only partial and preliminary reports, as figures from all of the 1,034 companies canvassed were not called for until the end of the week.

Chairman Smith has concentrated efforts on getting the maximum number of individual subscriptions of railroad workers of all ranks, in response to the government's declaration that the true success of the Liberty Loan would be measured by how generally the securities were scattered in the hands of citizens, instead of being massed in the banks.

Of the \$26,499,650 total known railroad subscriptions, made in block by companies and by employees, \$794,650 has been reported as already taken by individual employees. In their preliminary reports only 18 companies specified the number of individual subscribers, these showing 3,367 subscriptions amounting to \$393,900, which is an average of \$117 for each subscription. Eight other companies reported purchases of bonds by employees aggregating \$400,750, but did not give the number of subscribers.

The partial reports of railroad companies up to Wednesday evening showed the following:

Company	Number of Subscribers	Amount	Block Subscriptions by Companies
Atlantic Coast Line.....	457	\$49,100	.....
B. & O., Chicago Terminal.....	44	2,750	.....
Bangor & Aroostook.....	39	6,100	.....
Buffalo Creek	8	550	.....
Charleston & W. Carolina.....	21	2,250	.....
Del., Lackawanna & Western.....	388	51,250	.....
Grand Rapids & Indiana.....	25	2,400	.....
Kansas City Southern.....	260	31,450	.....
Louisville & Nashville.....	95	13,450	.....
Maine Central	64	20,600	.....
N. Y., Chicago & St. Louis.....	311	23,500	.....
N. Y., New Haven & Hartford..	14	1,600	.....
N. Y., Ontario & Western.....	93	9,950	.....
Pennsylvania Railroad.....	209	31,400	\$5,000,000
South Buffalo Ry.	15	1,450	.....
New York Central Lines.....	1,018	122,050	.....
Texas & Pacific.....	279	21,600	.....
Western Maryland	27	2,450	.....
	3,367	\$393,900	

Company	(No Report of Individuals)	Amount	Block Subscriptions by Companies
(Brought forward)		\$393,900	.....
Central Vermont		2,400	.....
Chicago & W. Indiana.....		16,450	.....
Pennsylvania, Lines West.....		114,950	.....
Northern Pacific		95,000	.....
St. Louis & San Francisco.....		67,000	.....
Natchez & Southern.....		85,000	.....
Buffalo & Susquehanna.....		30,000	100,000
Soo Line		55,000	100,000
Richmond, Fredericksburg & Potomac.....		250,000
Central Railroad of N. J.....		20,000	.....
Chicago, Burlington & Quincy.....		5,000,000
Union Pacific	5,000,000
Southern Pacific	5,000,000
Norfolk & Western.....		2,000,000
Baltimore & Ohio.....		1,000,000
Illinois Central	1,000,000
Canadian Pacific	1,000,000
Nashville, Chatt. & St. L.....		250,000
Totals		\$794,650	\$25,705,000
			794,650
Grand total			\$26,499,650

The advertising section of the Railroads Committee work has been extended to the limit of its possibilities throughout the country, and the brilliant posters urging subscriptions to the Liberty Loan have been placed in stations, workshops, coaches and other public places on railroad property everywhere.

Liberty bond slogans appeared early in the week on the dining menus of practically all the principal railroads in response to a special appeal sent out by the committee from New York, the chairman suggesting a variety of catch lines, such as:

"Get Aboard the Bond Wagon!"
 "Be a Contributing Patriot!"

"Fight or Pay Without Delay!"
 "Mobilize Your Money!"
 "The Liberty Loan Protects Your Own!"
 "Invest in Your Own Country!"
 "Liberty Bonds Behind the Guns Mean Victory!"
 "Enlist or Invest!"

So thorough is the railroad managements' campaign that the companies have arranged that employing officers shall present the Liberty Loan duty to each individual employee, in addition to the general proclamations and individual circular letters and blanks. By this means it is expected to reach practically every one of the 1,500,000 employees in all branches of railroad service.

Information as to the first appeals of the committee and as to the work of the railroads themselves will also be found in last week's issue, page 1149, and also in this issue on a preceding page.

Lawsuits for \$1,200,000 in Freight Bills

Six railroads, the Pennsylvania, the Pennsylvania Lines West, the Baltimore & Ohio, the New York Central, the Pittsburgh & Lake Erie and the Erie, have begun sixty suits in the courts of Pennsylvania, Ohio and West Virginia to recover freight charges on slag which, for a period of years, had been hauled from industrial plants without charge. The defendants named in the suits are twenty-four iron, steel, wire and tinplate manufacturers. This action is the first of its kind in the country and is a test case to secure a ruling as to the view put forth by the Interstate Commerce Commission, some time ago, to the effect that railroads had an additional source of revenue in the hauling of slag from industrial plants to dumping points. The railroads made no charge for the service.

Sir George J. Bury

The list of birthday honors announced at London on June 3, the birthday of King George, includes the name of George J. Bury, vice-president of the Canadian Pacific. Sir George was born in Montreal, March 6, 1866, and began service with the Canadian Pacific in 1883 as a clerk. He served for a time as stenographer for Mr. Shaughnessy, now Lord Shaughnessy, president of the company, and was promoted successively to the positions of assistant superintendent, superintendent at North Bay, at Fort William and at Cranbrook; as assistant general superintendent, and then, after successive promotions, vice-president. For the past two years he has been vice-president, with headquarters in Montreal. Sir George has just returned from Russia, where he went, on behalf of the British Government, as transportation adviser.

The Committee on Public Information

The committee on Public Information at Washington has requested all railway employees' magazines to publish the following announcement, signed either by the railroad's president or some other high officer:

To the employees of Railroad.

In order that the public may be thoroughly informed upon the various activities of the government during the present crisis, President Wilson has established a committee on Public Information.

This committee is composed of the Secretary of War, the Secretary of State, and the Secretary of the Navy, and has as its chairman, George Creel. Its services are at the call of any who may desire to be informed upon the affairs of the government as they relate to the present crisis.

It is peculiarly essential that those in charge of railroad affairs should be well posted upon government problems, and this is therefore addressed to you with the hope that you will avail yourself whenever you desire of the services of this committee.

All inquiries should be addressed to L. M. Harris, 8 Jackson Place, Washington, D. C.

International Railway General Foremen's Association

At a joint meeting of the officers and members of the executive committees of the International Railway General Foremen's Association and the Railway Supply Men's Association, held at the Hotel Sherman, Chicago, May 19, 1917, it was decided that the 1917 convention of the association should be cancelled until

such time as the executive shall decide for holding such convention.

The secretary-treasurer has been instructed to get out the annual book of proceedings, thereby maintaining its continuity, with this difference, that in lieu of the regular discussions the members be requested to send in written opinions, expressions and experiences to the secretary, who will arrange them for publication.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, July 18, 1917, Asheville, N. C.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago, Ill. Next meeting, June, 1917, Denver.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Annual meeting, August 8-10, Minneapolis, Minn.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Next annual meeting, June 26-29, Hotel Traymore, Atlantic City, N. J.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cincinnati, 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3rd Tuesday, Pittsburgh, Pa.
- FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Traffic Manager, R. F. & P., Richmond, Va. Annual convention, June 19, Chicago, Ill.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INVESTMENT BANKERS' ASSOCIATION OF AMERICA.—Frederick R. Fenton, 11 W. Monroe St., Chicago.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next meeting, June 12-13, Hotel McAlpin, New York.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Ag't, Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next meeting, June 19, Fresno, Cal.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

Traffic News

The hearing before the Illinois Public Utilities Commission on the application of the railroads for a 15 per cent advance in freight rates has been continued from June 5 to June 18.

The "St. Louis Sales Managers' Special" is a train which has been touring the Oklahoma oil field. Stops were made at Guthrie, Oilton, Jennings, Cleveland, Bartlesville, Collinsville and Tulsa.

The net shortage of freight cars on May 1, as reported by the American Railway Association, was 145,449 cars, or 652 more than the shortage on April 1; and it is the largest shortage since there began to be a general scarcity of cars last September.

The Baltimore-South American Navigation Company announces that steamships are to be run regularly between Baltimore and ports in South America, the first vessel, the Senta, sailed on May 30. Traffic officers of the Baltimore & Ohio Railroad announce that the freight for this sailing was assembled at points on that road. The second vessel will sail for Buenos Ayres on June 20.

The chairman of the committee on coal production of the advisory board of the Council of National Defense, announces that the pooling of coal shipments to lake ports has increased the capacity of lake shipping at the rate of about 2,500,000 tons for a whole season; and that a meeting of shippers and receivers has been called, with a view to pooling coal shipments by water to New England points.

At a recent meeting of the Toledo Traffic Club the following officers were elected for the coming year: President, H. E. Thatcher, general agent, Hocking Valley; first vice-president, P. R. Donovan, assistant claim agent, Toledo Railways & Light Company; second vice-president, Paul C. Hodges, commercial agent, Norfolk & Western; treasurer, Charles J. Sweeney, secretary of the Allie Williams Company, and secretary, Harry S. Fox.

The full bench of the Massachusetts Supreme Court has dismissed the petition of the National Dock & Storage Warehouse Company against the Boston & Maine Railroad, asking that the railroad be required to comply with an order of the State Public Service Commission, and cease discrimination in rates on import and export freight to and from the wharves of the National Dock Company in East Boston, as compared with like rates at the Commonwealth pier in South Boston.

The proposed new freight tariffs which have been filed by the railroads of North Carolina, were the subject of a hearing before the Corporation Commission of that State at Raleigh on May 31. It is said that shippers agreed that some increase would be proper; but the commission has ordered a further hearing this week, and also intends, apparently, to defer a decision until July 5, with a view to deciding on how much the rates shall be advanced only after learning the decision of the Interstate Commerce Commission regarding the proposed advances in interstate rates.

The Transportation Club of Detroit, Mich., has elected the following officers for the coming year: President, J. S. Kellie, traffic manager, the J. B. Ford Company, Wyandotte, Mich.; vice-president, W. S. Hogue, traffic manager, the Ford Motor Company, Detroit; second vice-president, W. A. Glass, west-bound agent, New York Central Lines; secretary, George A. Walker, soliciting freight agent, Grand Trunk; treasurer, William A. Burns, contracting freight agent, Union Pacific; executive committee, J. A. Sullivan, division freight agent, Wabash; H. R. Moule, traffic manager, the Chalmers Motor Car Company; F. H. Dowle, general agent, Erie; H. G. Peckham, soliciting freight agent, Michigan Central; F. J. Howell, freight solicitor, Pennsylvania Lines; Hugh Higginbottom, traffic manager, Dodge Brothers.

The St. Paul & Tacoma Lumber Company, of Tacoma, Wash., has received from J. A. Somerville, chairman of the commission on car service, now sitting at Washington and supervising freight

car movements throughout the country, a commendatory letter written on seeing in the *Railway Age Gazette* of May 25 the photographic illustration of a seventy-ton Pennsylvania gondola car which had been loaded by the St. Paul & Tacoma Lumber Company, with 60,973 feet of lumber, weighing 77 tons, or ten per cent above the marked capacity of the car, and therefore affording an excellent illustration of carrying on transportation at 100 per cent efficiency. Mr. Somerville says: "We wish to have you know that we appreciate this action on your part and the very apparent spirit of co-operation with the railroads for the mutual benefit of the railroads and the shipping public generally. . . . We trust you will continue this good work and in every way possible enlist co-operation of the shipping public in your territory. . . ."

Conventions Discouraged

The Executive Committee of the National Defense Committee of the American Railway Association has notified the railroads of the country that the Secretary of War has approved the suggestion of the committee that the holding of conventions which stimulate passenger travel be discouraged, at least until the railroads are more nearly able to handle the freight business that is being offered. The resolution of the War, Board, which the Secretary of War has advised is "manifestly wise," is in part as follows:

"It is the sense of this committee that conventions which will bring large bodies of persons to one point should be discouraged, in the interests of conservation of fuel, to avoid congestion, and to prevent interruption of necessary freight traffic, and to conserve equipment and energies which must be applied to accomplish the transportation required by the country."

Illinois Railroads Face Prosecution by Either Federal or State Courts

In spite of the injunction granted last week by Judge Charles M. Foell, of the Illinois Superior court at Chicago, restraining the railroads operating in Illinois from raising their passenger rates above the statutory rate of two cents, the Wabash raised its fare in Illinois from 2 cents to 2.4 cents a mile on May 31, to comply with the order of the United States District Court. The railroads operating in Illinois face the difficult alternative of raising their fares to 2.4 cents and thereby laying themselves open to citation for contempt in the Superior court at Chicago or of continuing to operate at the Illinois statutory rate of 2 cents and being cited for contempt in the United States District Court at St. Louis.

Car Utility Bulletin

How car space is wasted by the practice of shipping commodities in single trade units is graphically shown in a car utility bulletin just issued by the transportation department of the Pennsylvania Railroad. Copies of the bulletin will be distributed to all freight and station agents, with instructions to place them in the hands of shippers, consignees, brokers, buyers, boards of trade, chambers of commerce, and merchants' associations, and to urge co-operation in making more efficient use of the carrying capacity of freight cars.

The bulletin is illustrated with a series of seven diagrams showing the customary ways in which tomatoes, fertilizer, sugar in bags, sugar in barrels, salt in bags, oil in barrels and cotton in bales are shipped. In the case of each of these commodities, the commercial unit in which shipments are ordinarily made fills half, or less than half, of the carrying capacity of a box car. The diagrams show how practically the entire capacity of the car can be utilized; and the bulletin suggests that buyers, where possible, increase orders to carload lots or club together with other buyers. Shippers are urged to encourage larger trade units and solicit buyers to increase or combine their orders, so as to fill the car. "When this is not possible," says the bulletin, "then you should combine carload shipments which are destined to the same point, and when you have shipments that are going in the same general direction, they should also be combined in order to make full use of car space."

If the wasted space in the freight cars on the Pennsylvania Railroad System were utilized, the result would be equivalent to placing more than 120,000 additional cars at the service of the country.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has issued an order vacating as of June 6 its suspension orders of April 27 suspending tariffs filed by the railroads advancing the ex-lake iron ore rates by 15 cents a ton.

The commission has further suspended until December 15 tariffs of the eastern trunk lines naming increased storage charges on domestic and export freight held beyond free time in carriers' warehouses at New York harbor points and providing for an increased charge for the lighterage of heavy freight at New York and harbor points.

The commission has added a paragraph to its regulations governing the transportation of explosives and dangerous articles to permit shipments of explosives used for ammunition by express if the shipment is made for the War or Navy departments and if packed, marked and described as required by the commission's regulations. Cars containing these explosives, when hauled in a passenger or an exclusive express train, need not be placarded; but employees must be advised of the presence and location of the cars in the train.

The Interstate Commerce Commission has made public the tentative report of Examiner-Attorney Marshall and Examiner King in the case involving bituminous coal rates to Central Freight Association territory. The commission has also made public the tentative report of Examiner-Attorney Marshall and Examiner King in the lake cargo coal rate case involving rates on bituminous coal in carloads from mines in Pennsylvania, Maryland, West Virginia, Virginia, Kentucky and Ohio to Lake Erie ports for transportation by vessel. The tentative report claims that the reasonableness of the rates per se can now be determined because of the abnormal conditions prevailing and the pending application of the carriers for a general advance in rates. The present adjustment of rates is found to be unlawfully discriminatory and unduly prohibitive. Specific relations in the rates as between the several originating districts are ordered established. The respondents are also required to state separately in their tariffs charges for rail line and dock service.

Lake and Rail Rate Cancellations

Opinion by Commissioner Hall:

A carrier operating exclusively in Canada cannot be required to maintain joint arrangements with domestic carriers for the transportation of traffic from and to points in the United States. The order of suspension directed against a schedule filed by the Grand Trunk system canceling joint rates with the Northwestern Steamship Company and eastern trunk lines on traffic from Lake Superior ports is, therefore, vacated. (44 I. C. C., 745.)

Rates on Silk

Silk Association of America v. Pennsylvania Railroad et al.
Opinion by Commissioner Meyer:

Ratings in the official classification on less-than-carload shipments of raw silk, thrown or spun, whether or not on wooden spools, bobbins, or warp beams, when of a value in excess of \$1 per pound, of one and a half times first class; and of first class on such raw silk of a value not in excess of \$1 per pound, and on silk waste are found to be neither unreasonable nor discriminatory. Complaint dismissed. (44 I. C. C., 578.)

Rates from New Orleans and Galveston to Missouri River Cities

Opinion by the commission:

Carriers engaged in transporting traffic from New Orleans, La., and Galveston, Tex., to Kansas City, Mo., Omaha, Neb., Sioux City, Ia., and other Missouri river cities through the territory west of the line of the Kansas City Southern, seek authority to continue lower rates on domestic and import business to the said points than rates contemporaneously in effect on like traffic to intermediate points in Kansas. The commission holds: carriers, whose routes are reasonably direct, are not justified in

charging higher rates to intermediate points than to Missouri river cities. Fourth section relief denied. Carriers, whose lines are 15 per cent or more longer than the direct line, are authorized to continue lower rates from New Orleans and Galveston to Missouri river cities than to intermediate points in Kansas. (44 I. C. C., 727.)

Unrepeated Message Case

J. L. Cultra and Myrtle Cultra, partners, trading as the Clay County Produce Company v. Western Union Telegraph Company. *Opinion by Commissioner Harlan:*

On March 21, 1914, a firm of commission merchants at San Francisco sent to complainants at Clay Center, Kan., a telegraph message reading: "Haven't sold car which you shipped," which was made by defendant to read incorrectly: "Have sold car which you shipped." Through this error a loss was sustained of \$1,790.83, and suit for damages was brought in the courts, which suit was held in abeyance pending a ruling by the commission as to the law.

The commission holds that the Congress, by the language used in the amendatory act of 1910, has manifested a definite intention to place under the jurisdiction and control of this commission the rates and practices of interstate telegraph companies, as well as the rules, regulations, conditions and restrictions affecting their interstate rates; that the rate voluntarily used by the senders of the message in question was an unrepeated rate to which was lawfully attached, as a fundamental feature of it, the restricted liability insisted upon here by the defendant; that Congress has expressly authorized such rates with a restricted liability attached; that such rates are not therefore contrary to public policy, but on the contrary are binding upon all until lawfully changed; and that neither the interstate rates of the defendant nor the rules, practices, conditions and restrictions affecting those rates have been shown in this proceeding to be unreasonable or otherwise unlawful.

Complaint dismissed. (44 I. C. C., 670.)

The Wisconsin Rate Cases

Opinion by Commissioner Meyer:

In these cases the complainants attack class rates, and in some instances commodity rates, between certain Wisconsin cities and points in official classification territory east of the Indiana-Illinois state line. Following the submission of the cases the carriers canceled their joint class rates from central freight association territory to that part of the state of Wisconsin to which those rates exceeded the lowest combinations, and made certain other changes responsive to the matters complained of. The commission holds that the class rates to and from certain cities in southern Wisconsin are unreasonable and prejudicial, and reasonable maximum class rates are prescribed for the future. Complaints filed by other Wisconsin cities are dismissed.

The commission, in more detail, finds that the evidence does not justify it in requiring the extension of the New York-Chicago scale or the central freight association scale to the complaining cities upon a percentage relationship based upon distance.

The circumstances and conditions which have been most strongly operative in requiring the maintenance of the present level of rates to the lower and upper Mississippi river crossings, and to points in northern Illinois, do not apply to transportation to the Wisconsin cities involved in this case, and therefore have not exerted the same influence upon the rates to and from those cities. It has not been shown that the same rates per mile should be applied to those cities as to points in prorating territory. The differences in competitive conditions and other circumstances shown of record, however, do not justify the present large differences between the class rates applicable to and from points in northern Illinois and on the Mississippi river in Iowa, on the one hand, and those applicable to and from cities in southern Wisconsin, on the other. The class rates between New England, trunk line, and central freight association territories, and the southern Wisconsin cities and La Crosse are unreasonable and unduly prejudicial. Joint through class rates on the basis outlined below and governed by official classification should be substituted in their stead. Class rates between New York and those cities shall not exceed the following percentages of the New York-Chicago rates: To La Crosse, 145 per cent; to Madison and Stoughton, 125 per cent, and to Beloit, Janesville

and Watertown, 118 per cent. At these percentages of the present New York-Chicago rates the first-class rates from New York in cents per 100 pounds will be 114.3 to La Crosse, 98.5 to Madison and Stoughton, and 93 to Beloit, Janesville and Watertown. Class rates between other points in trunk line territory and points in New England territory, on the one hand, and the above-named Wisconsin cities, on the other, shall bear the same relation to the rates here fixed between New York and those cities as the class rates between the same points have heretofore borne to the rates between New York and the Wisconsin cities above named. Defendants will be expected, on or before June 30, 1917, to adjust class rates between points in central freight association territory and the above-named Wisconsin cities with proper relation to the rates here found reasonable between points in trunk line territory and those cities, and in such manner as to give complainants reasonable rates, free from undue prejudice or disadvantage. Defendants will also be expected to maintain to and from intermediate points rates reasonably related to the rates herein prescribed to and from the points above named. The conclusions herein are independent of other proceedings now pending, said to be based upon alleged emergencies, and which must be determined upon other considerations than the instant record presents.

These findings are not to be understood as condemning the making of class rates to Wisconsin points on the lowest combination, except as rates so made to southern Wisconsin cities have resulted in charges disproportionately high when compared with class rates to territory immediately adjacent in Illinois and on the Mississippi river in Iowa. The evidence before us does not indicate that any of the complaining cities or towns other than those above named are prejudiced by reason of the lower class rates applicable to points in prorating territory, or that the class rates under attack to and from those cities and towns are unreasonable per se. Commodity rates under attack have not been shown to be unreasonable or unduly prejudicial.

The defendants did not attempt to justify the departures from the fourth section covered by the applications set for hearing with these cases, and those applications will therefore be denied. Defendants have asserted their willingness to adjust all through rates to and from Wisconsin points herein involved so as not to exceed the aggregates of intermediates and to observe the twin cities rates as maxima. They will be expected to make such revision in instances not covered as well as in instances covered by fourth section applications set down herewith. (44 I. C. C., 602.)

STATE COMMISSIONS

The State Corporation Commission of Virginia has summoned the receiver of the Tidewater & Western to appear before the commission on June 14 to answer the complaints of manufacturers along the line of the road that the freight rates of the company are absolutely destroying their business. It is claimed also that farmers are suffering for food because they cannot sell their own products, nor can they bring in, at reasonable rates, what they would buy from outside. The railroad company had petitioned the commission for authority to wind up its affairs, because of the small amount of traffic offering and the probability of further heavy losses. This road—formerly it was the Farmville & Powhatan—crosses the Atlantic Coast Line at Chester, Va., 13 miles south of Richmond, and extends from Bermuda, Va., westward 89 miles to Farmville.

COURT NEWS

Crossing Accident—Pennsylvania Stop, Look and Listen Rule

A person was driving in a closed market wagon with curtains, sliding door and a glass front on a turnpike which paralleled a railroad before crossing it. A train running in the same direction in which he was going struck him as he was attempting to cross, killing him. The view was unobstructed at the crossing for over 800 feet. In an action for his death the Pennsylvania Supreme Court held that the presumption that he stopped, looked and listened before attempting to cross was rebutted by the circumstances, although there was no direct evidence on this point; and the trial court properly directed a verdict for the defendant.—*Miller v. Pennsylvania* (Pa.), 100 Atl., 654. Decided January 8, 1917.

Train of Defective Cars Subject to All Safety Appliance Laws

The United States Circuit Court of Appeals, Sixth circuit, in a decision by Judge Loyal E. Knappen, handed down May 8, has sustained the government in all of its contentions in the case against the Pennsylvania Company concerning the hauling of a train of 33 cars, in bad order, from Mosier, Ohio, to Erie, Pa., on July 25, 1913.

The decision affirms that of the District Court for the northern district of Ohio. The summary of the decision contains the following six points:

1. The hauling of a "hospital" train of 33 cars, the majority of which cars required heavy repairs and all of which were defective as to safety appliances, a distance of about 100 miles from a yard which was a repair point, over an interstate railroad, past other repair points, with the menace not only to the employees upon this train but also to other traffic upon the road, was not justified by the conjecturally possible saving of a few days' time in effecting the repairs.

2. The fact that cars hauled in a "hospital" train are empty bad-order cars not equipped with couplers operating automatically and each car fastened to the other by means of chains, shows *prima facie* a violation of law. The burden is thus cast upon the defendant to show affirmatively that such hauling is within the proviso of section 4 of the act of April 14, 1910.

3. The hauling of such a hospital train was unlawful unless a reasonable mind could reach no other conclusion than that the cars had to be moved for the purpose of repair; that the place to which they were hauled was the nearest available point (not the most available) where the repairs could be made; and that the repairs could not be made except at the place to which they were hauled.

4. The train-brake provision of the act applies to the movement of such a "hospital" train. It applies to "all trains" and all cars "used on any railroad engaged in interstate commerce."

5. The train-brake provision, like the Safety Appliance Acts generally, is absolute and mandatory.

6. Arguments of convenience cannot prevail against an absolute and mandatory provision designed for the protection not only of the employees on the given train but of employees and travelers on other trains.

The train consisted of 25 cars all chained together, the draw-bars being out of order; and no air brakes were connected. It was run at about ten miles an hour. There were several repair yards in the vicinity of Mosier, but the plea of the railroad was that it was necessary to take the cars to Erie because of the congested condition of these yards. The court, however, seems to hold that not sufficient effort was made to repair the cars without moving them such long distances; that there was also congestion at Erie; and that more men might have been employed to reduce the congestion.

The suit was tried without a jury, an agreed statement of facts being presented to the court.

UNITED STATES SUPREME COURT

The Supreme Court of the United States, on Monday, sustained the action of the Mobile & Ohio in refusing to obey the order of the railroad commission of Mississippi requiring the restoration of six passenger trains which the railroad company had discontinued. The court holds, with the railroad company, that the trains were interstate and, therefore, that the state commission had no authority to require their continuance.

The Supreme Court of the United States, on Monday, sustained the government in its suit against the Atchison, Topeka & Santa Fe to enforce penalties for violation of the hours of service law, in connection with the operation of a freight train. The decision holds, in substance, that an unavoidable accident cannot excuse a railroad for keeping trainmen on duty beyond the statutory period where it is possible to relieve them before they reach the end of their run.

The Supreme Court of the United States, on Monday, annulled as unconstitutional the law of Georgia requiring that on the approach of a train to a public crossing the whistle shall be blown and the speed of the train slackened. The case was against the Seaboard Air Line which had appealed from a state decision sustaining the law as a valid exercise of the police power. The Supreme Court holds that the law is a burden on interstate commerce.

Equipment and Supplies

LOCOMOTIVES

THE ILLINOIS TRACTION SYSTEM will build 6 electric locomotives in its Decatur, Ill., shops.

H. E. Oving, Jr. (Java) has ordered one four-wheel locomotive from the Baldwin Locomotive Works.

THE CENTRAL EL LUGARENO (Cuba) has ordered 2 Mogul type locomotives from the Baldwin Locomotive Works.

THE CENTRAL SAN RAMON (Cuba) has ordered one Mogul type locomotive from the Baldwin Locomotive Works.

THE CUBAN-AMERICAN SUGAR COMPANY has ordered one Mogul type locomotive from the Baldwin Locomotive Works.

THE SOUTHERN RAILWAY, reported in the *Railway Age Gazette* of May 18 as being in the market for 25 Santa Fe type locomotives, has ordered these locomotives from the American Locomotive Company.

FREIGHT CARS

THE CHICAGO & ALTON has issued formal inquiries for 500 gondola cars.

THE NORFOLK & WESTERN will build 2,000 steel center sill box cars in its own shops.

THE MARIANNA COAL COMPANY has ordered 1,000 coal cars from the Cambria Steel Company.

THE RITTENHOUSE & EMBREE LUMBER COMPANY is contemplating the construction of 50 flat cars.

THE BRIER HILL STEEL COMPANY has ordered 10 flat cars from the Mount Vernon Car Manufacturing Company.

THE UNITED STATES NAVY DEPARTMENT has ordered 2 flat cars from the Mount Vernon Car Manufacturing Company.

THE PENNSYLVANIA RAILROAD, reported in the *Railway Age Gazette* of May 25 as inquiring for 2,000 freight cars, will build 1,000 X 25 all steel box cars in its Altoona shops.

THE ATCHISON, TOPEKA & SANTA FE, which recently ordered 1,000 gondola cars from the American Car & Foundry Company, as reported in the *Railway Age Gazette* of May 18, has increased this order to 1,500 cars.

THE RUSSIAN GOVERNMENT was incorrectly reported in last week's issue as having divided an order for 10,000 four-wheel cars of 1,200-pood capacity equally between the American Car & Foundry Company and the Standard Steel Car Company. The order should have been reported as American Car & Foundry Company 6,500, and the Standard Steel Car Company 3,500.

THE UNITED STATES GOVERNMENT, through the Council of National Defense, is actively negotiating with the car builders for the construction of a total of 100,000 freight cars. S. M. Vauclain is chairman of the car committee which is investigating for the council to ascertain how many cars the various plants can turn out, but the actual authorizing of construction will be in the hands of Bernard M. Baruch, a member of the Advisory Commission of the Council of National Defense, or of Daniel Willard, its chairman.

IRON AND STEEL

THE PULLMAN COMPANY has ordered 563 tons of steel from the Buffalo Steel Works for repair shops at Buffalo.

THE IMPERIAL MUNITIONS BOARD OF CANADA has authorized the Algoma Steel Corporation and the Dominion Steel Corporation to roll 50,000 tons of standard section rails for Canadian railroads that helped the Dominion Government in time of need by sacrificing rails in service for export to the war zone. These roads were unable to secure new rails from American mills. The Canadian rails will be distributed among the Canadian Pacific, the Government Railways, the Grand Trunk, and the Temiskaming & Northern Ontario.

Supply Trade News

James H. Slawson, sales agent of the National Malleable Castings Company at Chicago, has been elected vice-president of the Joliet Railway Supply Company, with headquarters at Chicago.

W. L. Garland, sales representative of the Safety Car Heating & Lighting Company at Philadelphia, Pa., has also been appointed representative of the Vapor Car Heating Company, Inc., effective June 1.

The H. W. Johns-Manville Company has moved its Pittsburgh offices to new and larger showrooms, and sales offices were opened on the ground floor of the Westinghouse Building, corner of Ninth street and Pennsylvania avenue.

Walter H. Bentley, vice president of Mudge & Co., Chicago, Ill., has been elected president of the Locomotive Specialty Company, Railway Exchange building, Chicago, general distributors of the Ripken Main Rod Arm and other railway specialties.

A. Fletcher Marsh, secretary of the Marsh & Truman Lumber Company, Chicago, whose appointment as captain in the Quartermaster's Officers Reserve Corps, Central Department, United States Army, was announced in the *Railway Age Gazette* of April 27, is now serving as assistant to the camp quartermaster at Ft. Sheridan, Ill.

The Walter A. Zelnicker Supply Company, St. Louis, and allied companies have secured the services of Charles H. Trapp, who is to act as confidential secretary to Mr. Zelnicker, the president. Mr. Trapp was formerly associated with James Stewart & Co. in St. Louis, Denver and Idaho, and lately with Mr. Terrell Croft, consulting electrical engineer, St. Louis.

The Sangamo Electric Company, Springfield, Ill., announces the opening of a San Francisco office at 37 Stevenson street, in charge of L. A. Nott, district manager. This office will represent the Sangamo company in northern California and that part of southern California not handled by the Sangamo company's Los Angeles office. Mr. Nott was for many years with the Standard Underground Cable Company, and more recently with the K. P. F. Electrical Company, which association he will continue.

The American Steel Export Company, New York, announces the appointment of F. H. Tackaberry as traveling representative with the title of general agent. Mr. Tackaberry has recently been associated with the Ordnance Engineering Corporation of New York, and has occupied important executive positions in such organizations as the Industrial Underwriter, Inc., the Locke Steel Belt Company, etc. Up to the time of the outbreak of disturbances in Mexico he was the representative of the Pennsylvania Steel Company, in Mexico City and later the assistant general manager of sales for that company. Mr. Tackaberry's first trip will be to South America, Brazil being his immediate objective and Rio de Janeiro his first base of operations. For over a year the American Steel Export Company has been devoting a great deal of time to upbuilding its corps of representatives. Thirty have now been established on a firm basis at the strategic trade centers of the world and others are being constantly added as new territories are taken up for development. While the agents report in person at the home office for consultation from time to time it has been found desirable to have someone from the New York office devote his entire time to traveling from point to point between the agents to stimulate, organize and unify their efforts so that the utmost results may be obtained.

TRADE PUBLICATIONS

POLE JACKS.—Templeton, Kenly & Co., Chicago, Ill., has issued a folder describing the Simplex pole jack, a jack of the track jack type, equipped with a special base to facilitate the pulling of poles. Various testimonials from users of this device are included.

Railway Construction

AMARGOSSA VALLEY.—This company, which was recently incorporated in California with a capital stock of \$250,000, proposes to build a railroad 16.21 miles long through "Salt Basin" in San Bernardino county, from a point on the Tonopah & Tidewater Railroad 69 miles north of Ludlow to the plant of the Avawatz Salt & Gypsum Company, on the north slope of the Avawatz mountains. T. C. Job, 1100 Garland building, Los Angeles, Cal., is one of the incorporators.

ATCHISON, TOPEKA & SANTA FE.—This company is building a line from Sumpter, Okla., to a point about 10 miles northeast. A branch line from Porterville, Cal., to Ducor, a distance of about 10 miles, is also under construction, and will connect with the Ducor-Pond line, a small subsidiary of the Southern Pacific.

BALTIMORE & OHIO.—A contract has been given to J. Toner Barr, Pittsburgh, Pa., for work on a five-mile branch from Flemington, W. Va., to mines on Simpson's Creek. The work involves handling about 30,000 cu. yd. to the mile. The maximum grade will be 1 per cent and the maximum curvature 12 degrees.

BARTON COUNTY & SANTA FE.—This company has awarded a contract for the grading on a line from Holyrood, Kan., to Galatia, to John Scott & Sons, St. Louis, Mo. The line runs through a fairly level country and there are no special engineering difficulties to be overcome. Work will begin at once.

CLEAR LAKE RAILROAD.—This company has been organized for the purpose of building a railroad from Hopland, Cal., to Lakeport, about 24 miles. The underwriting of the bonds has been practically completed, and actual construction work on the project will begin soon. Guy L. Hardison, engineer-contractor, Rialto building, San Francisco, Cal., has the contract for the work.

LOS ANGELES & SALT LAKE.—This company has applied for a franchise to construct tracks through the city of Los Angeles, Cal., to the new Union Terminal Company's site, which, if granted, will involve an expenditure of about \$3,500,000 for new trackage and other facilities.

PRESCOTT & PHOENIX SHORT LINE, incorporated in Arizona, to build a line, it is said, from Glendale, Ariz., north to Prescott, about 100 miles. The general offices of the company are at Prescott. The project is being financed by large mining interest seeking a transportation outlet for ore. It is understood that the surveys are well under way, and that construction work will be started in the near future.

SOUTHWEST MISSOURI.—This company proposes to extend its line from Baxter Springs, Kan., to Pilcher, Okla., 7 miles. A. H. Rogers, Webb City, president.

TEXAS ELECTRIC & POWER COMPANY.—This company has been organized to construct an interurban line from San Angelo, Texas, through Hariett, Miles, Rowenna, Ballinger, Hatchell and Winters, a distance of about 54 miles. A transmission line to convey power to these cities has already been completed and the grading and tracklaying on the main line will be started at once. Charles W. Hobbs, San Angelo, Tex., is the president.

THE EYE AND CONTRASTS IN BRIGHTNESS.—Lecturing upon the "Effect on the Eye of Varying Degrees of Brightness and Contrast" before the Illuminating Engineering Society on February 20, Dr. James Kerr, of the public health department of the London County Council, referred to some effects which may be surprising. Having to examine long lists of figures in black type, he tried to facilitate his task by drawing vertical and horizontal lines in red ink, but the different focusing of the black and red strained his eye and gave him a headache, which did not trouble him when all the figures and lines were either black or red. Dr. Kerr questions whether a target is more distinct when a brilliantly illuminated white disk appears on a dead black background than when the surroundings were diffusely illuminated.—*Engineering*, London.

Railway Financial News

BALTIMORE & OHIO SOUTHWESTERN.—A \$20,000,000 mortgage to the Girard Trust Company and William N. Ely, of Philadelphia, trustees, has been filed in New Albany, Ind., to secure a new bond issue. The mortgage covers all of the property of the company in Indiana and Ohio.

HOCKING VALLEY.—See comments on the annual report for the calendar year 1916 elsewhere in this issue.

KANSAS CITY NORTHWESTERN.—This road, formerly a part of the Missouri Pacific system, extending from Kansas City, Kan., to Virginia, Neb., and from Menager Junction to Leavenworth, Kan., has been reorganized, and will be taken out of receivership in the near future. The directors elected at the first meeting of the stockholders in Kansas City, Kan., on May 14 are as follows: E. H. Boisot, Silas H. Strawn, J. B. Forgan, Jr., all of Chicago; R. F. Malone, E. H. Campbell, O. S. Lamb, all of Kansas City, Kan.; and L. S. Cass, of Waterloo, Ia. An executive committee, consisting of E. K. Boisot, Silas H. Strawn and L. S. Cass, was elected. L. S. Cass was chosen president, and R. F. Malone, assistant secretary. The reorganized company is a Kansas corporation.

MISSOURI, KANSAS & TEXAS.—See Wichita Falls & Northwestern.

MISSOURI PACIFIC.—The following have been elected directors: B. F. Bush, Nicholas F. Brady, Harry Bronner, Carl R. Gray, Alexander J. Hemphill, Charles I. Ingersoll, William H. Lee, John H. McClement, Edgar L. Marston, John Milliken, Finley J. Shepard, E. C. Simmons, Cornelius Vanderbilt, C. Minot Weld, Elbert H. Wiggins, R. Lancaster Williams and William H. Williams.

NEW YORK CENTRAL.—The State Public Utilities Commission of New Jersey has authorized this company to issue 4 per cent consolidation mortgage gold bonds to the amount of \$70,000,000 for the purpose of retiring an equal amount of Lake Shore collateral gold bonds of the New York Central & Hudson River. The board also granted the New York Central's application for the issuance of 4½ per cent refunding and improvement bonds to the amount of \$10,000,000 for the purpose of reimbursing its treasury for capitalizable expenditures to the total amount of \$7,778,503.23 made from January 1, 1915, to January 31, 1917, and not heretofore capitalized. The remainder is to pay for additions and betterments to the company's property now in progress. In the \$10,000,000 issue it is stipulated that the bonds may be sold for not less than 93½ per cent of their face value and accrued interest.

PITTSBURGH, SHAWMUT & NORTHERN.—Frank S. Smith, receiver, has applied to the New York Public Service Commission for authority to issue \$525,000 receiver's certificates.

ST. LOUIS & HANNIBAL.—Judge David P. Dyer, in the United States District Court of St. Louis, has appointed W. L. Morsey, of Warrenton, Mo., to sell this road at public auction. The order followed the foreclosure of a mortgage on the railroad, which was asked by C. Ledyard Blair, Charles W. Cox and other bondholders of St. Louis & Hannibal Railway bonds, who based Federal action taken last March on the railroad's failure to pay interest on bonds aggregating \$380,000. The unpaid interest on bonds from January 1, 1890, compounded amounts to more than \$1,500,000.

WESTERN MARYLAND.—See comments on the annual report for the calendar year elsewhere in this issue.

WICHITA FALLS & NORTHWESTERN.—C. E. Schaff has been appointed receiver of this company, which is a subsidiary of the Missouri, Kansas & Texas. Mr. Schaff is also receiver of the Missouri, Kansas & Texas. The receivership suit was instituted when it became apparent that the subsidiary would be unable to pay its floating debt and meet the interest due July 1. The line runs from Wichita Falls, Tex., to Forgan, Okla., a distance of 328 miles.

ANNUAL REPORTS

THE HOCKING VALLEY RAILWAY COMPANY—EIGHTEENTH ANNUAL REPORT

Columbus, Ohio, May 17, 1917.

To the Stockholders:

The Eighteenth Annual Report of the Board of Directors, for the fiscal year ended December 31, 1916, is herewith submitted. There are also submitted herein certain tables relating to the operation for the period of six months ended December 31, 1916.

The average mileage operated during the year was 350.2 miles, a decrease over the previous year of .9 miles. The mileage at the end of the year was 349.6 miles. See schedule on page 8.

RESULTS FOR THE YEAR.

Operating Revenues were	\$8,200,419.92
(Increase \$1,758,975.00 or 27.31%.)	
Operating Expenses were	5,597,889.01
(Increase \$1,525,026.38 or 37.44%.)	
Net Operating Revenue was	\$2,602,530.91
(Increase \$233,948.62 or 9.88%.)	
Taxes were	590,470.10
(Increase \$180,347.95 or 43.97%.)	
Operating Income, Taxes deducted, was	\$2,012,060.81
(Increase \$53,600.67 or 2.74%.)	
Miscellaneous Income was	1,146,804.24
(Increase \$970,694.22 or 551.19%.)	
Rentals and Other Payments were	\$3,158,865.05
(Increase \$538,686.01.)	
Income for the year available for interest was	\$2,588,414.92
(Increase \$485,608.88 or 23.09%.)	
Interest (53.92% of amount available) amounted to	1,212,288.14
(Decrease \$138,143.54 or 10.23%.)	
Net Income for the year amounted to	\$1,376,126.78
(Increase \$623,752.42 or 82.90%.)	
Dividends paid during the year:	
Two dividends of 2% each, aggregating	439,980.00
Remainder	\$ 936,146.78

RETURN ON PROPERTY.

The following table shows the amount of return to your Company, from transportation operations only, upon its investment in road and equipment at the termination of each year of the five year period ended December 31, 1916:

YEAR ENDED DECEMBER 31:	PROPERTY INVESTMENT.	TOTAL OPERATING INCOME. (including hire of equipment and other items).	PER CENT. OF RETURN.
1916	\$45,198,144.03	\$3,052,123.37	6.75
1915	44,802,665.64	2,041,149.36	4.56
1914	45,475,978.73	1,673,012.19	3.68
1913	42,525,047.49	2,547,540.52	5.99
1912	41,438,491.33	2,919,271.22	7.04
Average	\$43,888,065.44	\$2,446,619.33	5.57

FINANCIAL.

The changes in funded debt shown by balance sheet of December 31, 1916, as compared with December 31, 1915, consisted in the retirement of \$3,000 par amount of The Hocking Valley Railway Company First Consolidated Mortgage 4½% Bonds through the sinking fund, in the annual payments of \$606,000 on equipment trusts, and in the addition of \$220,000 face amount of equipment obligations in respect of two hundred 50-ton coal cars acquired.

An analysis of the property accounts will be found on pages 12 and 13, by reference to which it will be seen that additions and betterments were made during the year to the net amount of \$400,499.89, of which \$352,965.96 was added to cost of road, and \$47,533.93 was added to cost of equipment.

During the past eight years your Company's net addition to property accounts has been as follows:

Equipment	\$3,732,544.66
Additions and Betterments	3,198,645.76
	\$6,931,190.42

GENERAL REMARKS.

The Interstate Commerce Commission at a general session held November 24, 1916, ordered all common carriers, subject to the provisions of the Act to Regulate Commerce, to file with the Commission, on or before the thirty-first day of March in each year, reports covering the period of twelve months ending with the preceding thirty-first day of December, thereby changing the fiscal year period from June 30th. In conformity with this order your Board at its meeting held December 21, 1916, authorized the preparation for distribution to the stockholders of the annual report of your Company for the fiscal year from January 1st to December 31st of each year, (instead of as heretofore from July 1st to June 30th), beginning with the year January 1st, 1916, to December 31st.

The equipment in service December 31, 1916, consisted of:

Locomotives owned	125	Decrease	22
Locomotives leased under equipment trusts	8	No change	
Total locomotives	133	Decrease	22
Passenger train cars owned	73	Decrease	9
Freight train and miscellaneous cars owned	9,705	Decrease	62
Freight train cars leased under equipment trusts	5,540	Increase	195
Freight train cars under special trust	47	No change	
Total freight train and miscellaneous cars	15,292	Increase	133

The changes during the year in accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1915	\$1,331,899.00
Amount credited during year ended December 31, 1916, by charges to operating expenses	\$255,587.14
Amount credited by adjustment of charges in 1908 and 1909	6,994.78
	\$262,581.92

Charges to account for:	
Accrued depreciation on equipment retired during year—	
22 locomotives	\$40,226.59
74 freight and work cars	6,985.68
2 passenger cars	1,952.55
Accrued depreciation on cars changed in class during year	1,518.10
	50,682.92
	211,899.00

Balance to credit of account December 31, 1916

Five additional 100-car tracks were installed, and a 15-stall enginehouse with other shop facilities, including shop tracks, in Parsons Yard at South Columbus is well under way, in order to provide necessary facilities for new business to be received from The Chesapeake and Ohio Northern Railway upon its completion. The capacity of the Toledo Dock Yard has been increased by the construction of twelve additional storage tracks and the Pomeroy Yard by five additional storage tracks. The light double track girder bridge over the Hocking River at Lancaster Camp Ground was replaced by a modern heavy bridge.

The revenue coal and coke tonnage was 9,290,499 tons, an increase of 35.7%; other revenue freight tonnage was 3,768,841 tons, an increase of 25.6%. Total revenue tonnage was 13,059,340 tons, an increase of 32.6%. Freight revenue was \$6,681,262.18, an increase of 29.7%. Freight train mileage was 1,365,574 miles, an increase of 17.5%. Revenue ton miles were 1,644,153,717, an increase of 31.1%. Ton mile revenue was 4.06 mills, a decrease of 1.2%. Revenue per freight train mile was \$4.893, an increase of 10.5%. Revenue tonnage per train mile was 1,204 tons, an increase of 11.6%; including Company's freight, the tonnage per train mile was 1,237 tons, an increase of 11.3%. Tonnage per locomotive, including Company's freight, was 1,045 tons, an increase of 10.1%. Revenue tonnage per loaded car was 40.1 tons, an increase of 5.8%. Tons of revenue freight carried one mile per mile of road were 4,694,899, an increase of 31.4%.

There were 1,763,811 passengers carried, an increase of 2.1%. The number of passengers carried one mile was 47,226,930, an increase of 10%. Passenger revenue was \$917,934.75, an increase of 11.9%. Revenue per passenger per mile was 1.900 cents, an increase of 1.6%. The number of passengers carried one mile per mile of road was 134,857, an increase of 10.2%. Passenger train mileage was 706,068, an increase of .2%. Passenger revenue per train mile was \$1.271, an increase of 11.5%; including mail and express it was \$1.463, an increase of 12.4%. Passenger service train revenue per train mile was \$1.531, an increase of 12.4%.

There were 2,502 tons of new 100-lb. rails, equal to 15.92 track miles, and 1,938 tons of new 90-lb. rails, equal to 13.70 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive was \$2,565.55; per passenger train car \$704.83; per freight train car \$83.79.

Appreciative acknowledgment is hereby made of efficient services during the year of officers and employees.

By order of the Board of Directors.

FRANK TRUMBULL,

Chairman.

GEO. W. STEVENS,

President.

GENERAL INCOME ACCOUNT.

For Year ended December 31, 1916, and Comparison with Year ended December 31, 1915.

TABLE 2.

OPERATING REVENUES:	1916.	1915.	INCREASE OR DECREASE.	PER CENT.
Freight Traffic	\$6,681,262.18	\$5,149,841.72	\$1,531,420.46	29.7
Passenger Traffic	917,934.75	820,291.01	97,643.74	11.9
Transportation of Mails	52,836.28	47,894.57	4,941.71	10.3
Transportation of Express	82,903.24	66,756.81	16,146.43	24.2
Miscellaneous	465,483.47	356,660.81	108,822.66	30.5
Total Operating Revenues	\$8,200,419.92	\$6,441,444.92	\$1,758,975.00	27.3
OPERATING EXPENSES:				
Maintenance of Way and Structures	\$ 787,949.38	\$ 636,189.46	\$ 151,759.92	23.9
Maintenance of Equipment	2,156,129.36	1,163,317.14	992,812.22	85.3
Traffic	101,989.06	103,550.74	—1,561.68	1.5
Transportation	2,364,019.67	1,993,734.61	370,285.06	18.6
Miscellaneous Operations		1,483.00	—1,483.00	100.0
General	187,801.54	174,587.68	13,213.86	7.6
Total Operating Expenses	\$5,597,889.01	\$4,072,862.63	\$1,525,026.38	37.4
Net Operating Revenue	\$2,602,530.91	\$2,368,582.29	\$233,948.62	9.9
Uncollectible Railway Revenues	\$ 622.44	\$ 1,051.28	—428.84	40.8
Railway Tax Accruals	590,470.10	410,122.15	180,347.95	44.0
	\$ 591,092.54	\$ 411,173.43	\$ 179,919.11	43.8
Railway Operating Income	\$2,011,438.37	\$1,957,408.86	\$ 54,029.51	2.8
ADD:				
Other Income (Balance)	576,976.55	145,397.18	431,579.37	296.8
Total	\$2,588,414.92	\$2,102,806.04	\$ 485,608.88	23.1
FROM WHICH, DEDUCT:				
Interest on Debt	\$1,212,288.14	\$1,350,431.68	—\$138,143.54	10.2
NET INCOME	\$1,376,126.78	\$ 752,374.36	\$ 623,752.42	82.9
Amount to credit of Profit and Loss December 31, 1915			\$7,444,531.38	
Amount of Net Income for the year ended December 31, 1916, transferred to credit of Profit and Loss			1,376,126.78	
			\$8,820,658.16	
From which deduct:				
Dividend No. 36 of 2% paid June 30, 1916			\$219,990.00	
Dividend No. 37 of 2% paid December 30, 1916			219,990.00	
			\$439,980.00	
Old accounts written off, and sundry adjustments			\$8,380,678.16	
			659,990.11	
Balance to credit of Profit and Loss December 31, 1916			\$7,720,688.05	

GENERAL BALANCE SHEET, DECEMBER 31, 1916.

ASSETS.

TABLE 3.	
Property Investment.	
Cost of Road	\$29,311,313.29
Cost of Equipment	14,679,709.79
	\$43,991,023.08
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.	
Stocks	\$ 108,088.66
Bonds	300,000.00
	408,088.66
Securities of Proprietary, Affiliated and Controlled Companies—Unpledged.	
Bonds	\$ 150,000.00
Miscellaneous	29,040.00
	179,040.00
Other Investments.	
Miscellaneous Investments — Securities—Pledged	200,000.00
	\$44,778,151.74

GENERAL BALANCE SHEET (Continued)

Working Assets.	
Cash	\$ 1,048,966.09
Loans and Bills Receivable	62,315.36
Traffic Balances	177,321.06
Agents and Conductors	195,091.51
Miscellaneous Accounts Receivable	462,515.39
Other Working Assets	65,068.95
	\$ 2,011,278.36
Materials and Supplies	1,008,450.76
Securities in Treasury—Unpledged.	
Stocks	\$ 501.00
Bonds	1,192,450.00
	1,192,951.00
Deferred Assets.	
Advances to Proprietary, Affiliated and Controlled Companies	\$ 55,992.03
Advances, Working Funds	1,161.15
Insurance paid in advance	4,783.86
Cash in Sinking Funds	650.74
Special Deposit with Trustee—Mortgage Fund	399,900.00
Cash and Securities in Insurance Reserve Fund	42,611.12
Other Deferred Debit Items	37,650.49
	542,749.39
	4,755,429.51
Total	\$49,533,581.25
LIABILITIES.	
Capital Stock	
Funded Debt.	
First Consolidated Mortgage 4½% Bonds, 1999	\$16,022,000.00
First Mortgage C. & H. V. R. R. 4% Bonds, 1948	1,401,000.00
First Mortgage Cols. & Tol. R. R. 4% Bonds, 1955	2,441,000.00

Two Year 5% Gold Notes, 1917	4,000,000.00	\$23,864,000.00
Equipment Trust Obligations		1,683,000.00
		25,547,000.00
		\$36,547,000.00
Working Liabilities.		
Loans and Bills Payable	\$ 792,893.26	
Traffic Balances	405,091.77	
Audited Vouchers and Wages Unpaid	996,006.15	
Miscellaneous Accounts Payable	75,960.99	
Matured Interest, Dividends and Rents Unpaid	377,598.50	
Other Working Liabilities	26,589.64	
		\$ 2,674,140.31
Deferred Liabilities.		
Unmatured Interest, Dividends and Rents Payable	\$ 121,545.49	
Taxes Accrued	296,386.05	
Operating Reserves	1,014.47	
Accrued Depreciation—Equipment	1,543,798.00	
Other Deferred Credit Items	152,839.23	
		2,115,583.24
Appropriated Surplus.		
Additions to Property through Income since June 30, 1917	\$ 181,409.11	
Funded Debt Retired through Income and Surplus	131,331.90	
Reserve Invested in Sinking Fund	817.52	
Reserve Invested in Insurance Fund	42,611.12	
Appropriated surplus against contingent liability for freight claims	120,000.00	
		\$ 476,169.65
Profit and Loss—Balance		7,720,688.05
		8,196,857.70
Total		\$49,533,581.25

WESTERN MARYLAND RAILWAY COMPANY—EIGHTH ANNUAL REPORT

BALTIMORE, Md., May 1, 1917.

TO THE STOCKHOLDERS OF

THE WESTERN MARYLAND RAILWAY COMPANY:

The Eighth Annual Report of the operations of your Company, embracing the year ended December 31, 1916, is herewith respectfully submitted. In conformity with the order of the Interstate Commerce Commission this report is rendered as of December 31st instead of June 30th to agree with the report to the Commission.

The results of the operations for the year are reflected in the following condensed comparative statement:

	1916.	1915.	Increase.
Miles Operated	773	663.78	109.22
Railway Operating Revenues	\$11,967,981.95	\$9,888,600.13	\$2,079,381.82
Railway Operating Expenses	7,516,221.78	6,653,357.57	862,864.21
Net Operating Revenue	\$4,451,760.17	\$3,235,242.56	\$1,216,517.61
Railway Tax Accruals	\$405,540.00	\$321,000.00	\$84,540.00
Uncollectible Railway Revenue	545.69	858.59	Dec. 312.90
Operating Income	\$4,045,674.48	\$2,913,383.97	\$1,132,290.51
Miscellaneous Operations	855.52	Dr. 1,590.19	2,445.71
Total Operating Income	\$4,046,530.00	\$2,911,793.78	\$1,134,736.22
Other Income	225,932.27	291,499.37	Dec. 65,567.10
Gross Income	\$4,272,462.27	\$3,203,293.15	\$1,069,169.12
Deductions from Gross Income	2,953,402.35	3,310,800.43	Dec. 357,398.08
Net Income	\$1,319,059.92	Def. \$107,507.28	\$1,426,567.20
Operating Ratio	62.80%	67.28%	Dec. 4.48%

The income of The Davis Coal and Coke Company, for the period January 1, 1916, to June 30, 1916, inclusive, amounting to \$99,697.01, is included in Other Income, and interest, for the same period, upon the \$16,000,000 of Notes which were in default, and upon the defaulted interest as well, amounting to \$464,500.00, is included in the Deductions from Gross Income.

In order to determine what would have been the year's operations under the financial structure of the new Company, the net difference between these two amounts, or \$364,802.99, should be added to the Net Income, making a total of \$1,683,862.91 for the year.

In connection with the above, the following remarks explain the increases and decreases:

MILEAGE:
Increase in miles operated from 663.78 to 773, or 109.22 miles, is in the following:

Williamsport, Nettle & Martinsburg Ry.—Connection with Charlton Branch to a point near Nettle, W. Va. ....	.91
Somerset Coal Ry.—Coal Junction, Pa., to Gray, Pa.	2.20
Fairmont Helen's Run Ry.—Chiefton, W. Va., to Idamay and Carolina, W. Va.	6.11
Bowest, Pa., to Bowest Junction, Pa.—Connection with B. & O. R. R.	1.45
Baltimore & Ohio R. R.—Trackage Rights: Rockwood, Pa., to Coal Junction, Pa.	21.70
Bowest Junction, Pa., to Chiefton, W. Va.	76.85
	98.55
	109.22

OPERATING REVENUES:

Total Operating Revenues amounted to \$11,967,981.95, compared with \$9,888,600.13, an increase of \$2,079,381.82, or 21.03%. Of this increase \$45,831.32 resulted from coal shipments and \$1,550,242.84 from miscellaneous freight, or increases of 0.95% and 41.74%, respectively. Passenger revenue increased \$110,660.69, or 12%, and other revenue from passenger trains increased \$33,670.09, or 11.64%; a total increase of \$144,330.78, or 11.91%.

The freight revenue accruing to this Company from the more important facilities is as follows:

Port Covington Grain Elevator	\$832,140.68
Somerset Coal Railway	157,888.53
Fairmont Helen's Run Railway	61,710.06
Nettle Branch	97,668.27
Total	\$1,149,407.54

OPERATING EXPENSES:

Total Operating Expenses amounted to \$7,516,221.78, compared with \$6,653,357.57 last year, an increase of \$862,864.21, or 12.97%.

Maintenance of Way Expenses amounted to \$1,326,471.57, compared with \$1,228,813.23, an increase of \$97,658.34, or 7.95%.

Increase was due to higher cost of labor and material. Condition of track and structures continues to improve.

Maintenance of Equipment Expenses amounted to \$1,823,219.18, compared with \$1,646,662.26, an increase of \$176,556.92, or 10.72%.

The higher cost of labor and material is reflected in part of the above increase, otherwise the expenditures are consistent with the increased volume of business.

Locomotive Mileage for the year increased 474,236, or 8.40%, and freight car mileage increased 9,468,679, or 10.97%.

Both locomotive and car repair conditions are normal.

Obsolete Equipment, consisting of 266 freight cars, 11 passenger coaches, 22 locomotives and 36 work cars, all of light capacity and not justifying repairs, were charged off during the year, resulting in a charge to Operating Expenses of \$109,451.15.

Traffic Expenses amounted to \$264,452.74, compared with \$264,518.22, a slight decrease of \$65.48.

Transportation Expenses amounted to \$3,713,338.13, compared with \$3,234,709.68, an increase of \$478,628.45, or 14.80%. The transportation ratio was 31.03%, compared with 32.71%, a decrease of 1.68%. The revenue per freight train mile was \$4.32, compared with \$4.04, an increase of \$0.28.

Constant attention is being paid to the important question of train loading, an additional advance from 812 to 850 revenue tons per freight train mile having been accomplished.

Miscellaneous Operations amounted to \$131,612.36, compared with \$57,127.60, an increase of \$74,484.76 or 130.38%. The increase is due mainly to the operation of the Port Covington Grain Elevator, for which there was no corresponding item last year except for part of December, 1915.

General Expenses amounted to \$264,415.16 compared with \$229,231.16, an increase of \$35,184.00 or 15.35%.

The following important work constituting additions, improvements and permanent betterments to the property, has been completed during the year:

permanent betterments to the property, has been completed during the year.		
Baltimore:	Track facilities for U. S. Asphalt & Refining Company and the Prudential Oil Company at Curtis Bay.	
Green Spring:	Connection with Pennsylvania Railroad.	
Baltimore to Hagerstown:	Strengthening bridges for operation of new mallet locomotives.	
Westernport:	Connection and interchange yard with Cumberland and Pennsylvania Railroad.	
Bowest:	Connection with Baltimore and Ohio Railroad.	
Rockwood Junction:	Connection with Baltimore and Ohio Railroad.	
Port Covington:	Addition to grain elevator.	
	Fire protection system for coal pier.	
	Strengthening transfer bridge.	
	Storage and train tracks, 5.5 miles.	
Big Pool to Emory Grove:	Cumberland:	Sidewalk on Market street.
Automatic block signals.	Colmar to Connellsville:	Automatic block signals.
Keymar:	Elkins:	Paving on Eleventh street.
Crossing signal bell.	Davis:	Sidings for Mine No. 29.
Security:	Chambersburg:	Crossing signal bell.
Crossing signal bell.	North Junction to Lurgan:	Anti-Creepers.
Hagerstown:	Fowlesburg:	Crossing signal bell.
Concrete storage building.	Hanover:	Crossing signal bell.
Two 100-ton lowering jacks.	Hampstead:	Crossing signal bell.
Charlton:		
Track scales.		
Edgemont to Pen Mar:		
Second track, 2.73 miles.		
Pearre:		
Bunk house.		
Maryland Junction:		
Rest Room.		
Commercial and industrial tracks were constructed at the following points:		
Owings Mills,	Sloan,	York,
Parkhead,	Chambersburg,	Casselman,
Cohill,	Maria Furnace,	Shaw,
Pearre,	Gettysburg,	Lonaconing,
Oldtown.		

TIE PLATES:

During the year 66,937 heavy tie plates were applied at a cost of labor and material of \$12,702.17.

RAIL:

22.6 miles of new 90 pound rail were laid to replace worn rail and to provide relay rail for coal extensions and sidings.

BALLAST:

68,878 cubic yards of crushed rock ballast were renewed during the year.

FINANCES:

Floating indebtedness amounting to \$2,065,000 represented by notes of \$500,000, \$265,000, \$1,000,000 and \$300,000, due March 1, 1917, June 1, 1917, September 1, 1917, and November 1, 1917, respectively, was added to the Company's liabilities during the year. This amount was applied: to the construction of grain elevator at Port Covington \$407,831.47; to Additions and Betterments Railway Properties \$1,389,810.23; Coal Properties \$113,497.94; to Advances to Subsidiary Companies \$153,860.36.

Equipment Trust Obligations amounting to \$520,461.97 were paid during the year, leaving \$3,684,082.83 unpaid of said obligations. There was issued during the year \$450,000 of 5% notes to cover purchase of 15 mallet compound locomotives and \$3,403,574.80 of 5% notes (interest included in notes) to partially cover purchase of 3,000 all-steel Hopper Cars.

The balance of obligations for installation of block signals between Cumberland, Md., and Big Pool, Md., amounting to \$60,000, were paid off. For installation of block signals between Colmar, Pa., and Greenwood, Pa., obligations were incurred amounting to \$67,088, payable in 60 monthly installments.

FINANCIAL READJUSTMENT:

Pursuant to the Plan of Financial Readjustment, approved by the stockholders on November 17, 1916, the consolidation of your Company with its principal leased-line companies has been consummated and disposition of the coal properties of the system has been effected through the lease to The Davis Coal and Coke Company of the mines and mining operations located on the West Virginia Central Division of your Company's railway and the sale to the Monongalia Coal Lands Company of the coal reserve in Marion and Monongalia Counties, West Virginia. The \$10,000,000 face value of five per cent. notes and \$6,000,000 face value of six per cent. notes of your Company and the deferred interest thereon aggregating \$1,739,500 have also been satisfied and discharged through the issue of a par amount of first preferred 7% stock equal to the indebtedness represented by these notes as of July 1, 1916, thus effecting a substantial reduction in annual fixed charges which should be reflected in the account for the current year.

GENERAL:

The receipt of grain at the Port Covington Grain Elevator during the year was quite large. The additional facilities put in operation September 20, 1916, have aided materially in handling the large grain receipts. During the year 33,596,285 bushels of grain were received, representing the contents of 22,445 cars and 162 small bay boats. 283 vessels were loaded at an average of 114,182 bushels per vessel.

Your Company has just begun to realize upon coal shipments from the mines of the Consolidation Coal Company in Somerset County, Pennsylvania, and in the Helen's Run field, Fairmont District, West Virginia. The branch line of the Fairmont-Bingamon Railway Company, now under construction, should be completed and in operation July 1, 1917; this work having been considerably delayed for steel bridge material.

CONCLUSIONS:

During the year under review the expenses of your Company have been greatly augmented by the material increases in the cost of all materials, including fuel, and on account of the steadily advancing cost of labor. This must become serious unless the railways are given governmental permission to materially increase freight rates. These conditions are reflected in the operations of all railways alike, and urgent representations have been made to the Interstate Commerce Commission and to State Commissions of the necessity for immediate relief.

The loyal and efficient service of officials and employees is gratefully acknowledged.

By order of the Board of Directors.

CARL R. GRAY,
President.

COMPARATIVE INCOME ACCOUNT FOR THE YEARS ENDED
DECEMBER 31, 1916 AND 1915.

	1916.	1915.	Increase.
RAILWAY OPERATING INCOME:			
Rail Operations:			
Operating Revenues	\$11,967,981.95	\$9,888,600.13	\$2,079,381.82
Operating Expenses	7,516,221.78	6,653,357.57	862,864.21
Net Operating Revenue	\$4,451,760.17	\$3,235,242.56	\$1,216,517.61
Tax Accruals	\$405,540.00	\$321,000.00	\$84,540.00
Uncollectible Railway Revenues	545.69	858.59	Dec. 312.90
Total Tax Accruals, etc.	\$406,085.69	\$321,858.59	\$84,227.10
Operating Income	\$4,045,674.48	\$2,913,383.97	\$1,132,290.51
Miscellaneous Operations	855.52	1,590.19*	2,445.71
Total Operating Income	\$4,046,530.00	\$2,911,793.78	\$1,134,736.22
OTHER INCOME:			
Joint Facility Rents	\$21,287.68	\$21,231.34	\$56.34
Miscellaneous Rents	9,004.37	20,410.73	Dec. 11,406.36
Miscellaneous Nonoperating Physical Property	585.41	422.65	162.76
Net Income from Coal Companies and Miscellaneous Properties	123,572.37	206,513.90	Dec. 82,941.53
Income from Funded Securities	42,100.00	18,308.33	23,791.67
Income from Unfunded Securities and Accounts	16,380.16	9,568.84	6,811.32
Income from Sinking Fund Interest on Advances to Subsidiary Companies:			
For Construction	10,164.46	8,987.51	1,176.95
For Expenditures for Additions and Betterments		5,461.31	Dec. 5,461.31
Miscellaneous Income	170.10	1.00	169.10
Total Other Income	\$225,932.27	\$291,499.37	Dec. \$65,567.10
Gross Income	\$4,272,462.27	\$3,203,293.15	\$1,069,169.12

DEDUCTIONS FROM GROSS INCOME:

Hire of Equipment	\$27,711.05	\$140,212.70	Dec. \$112,501.65
Joint Facility Rents	95,267.48	79,624.28	15,643.20
Rent for Leased Roads	121,566.50	121,566.50	
Miscellaneous Rents	37,035.96	4,352.51	32,683.45
Interest on Funded Debt	2,409,299.46	2,665,153.15	Dec. 255,853.69
Interest on Unfunded Debt	235,960.60	250,138.94	Dec. 14,178.34
Amortization of Discount and Commission on Funded and Unfunded Debt	19,085.81	46,637.15	Dec. 27,551.34
Miscellaneous Income Charges	7,475.49	3,115.20	4,360.29
Total Deductions	\$2,953,402.35	\$3,310,800.43	Dec. \$357,398.08
Surplus for Year	\$1,319,059.92		\$1,426,567.20
Deficit for Year		\$107,507.28	

* Loss.

SYSTEM PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED
DECEMBER 31, 1916.

DEBIT BALANCE DECEMBER 31, 1915..	\$2,900,425.71
CREDIT BALANCE TRANSFERRED FROM INCOME ACCOUNT	\$1,319,059.92
UNREFUNDED OVERCHARGES	778.00
MISCELLANEOUS CREDITS	2,577.21
SURPLUS OF PROPRIETARY AND CONTROLLED COMPANIES:	
Sinking Fund Accretions:	
The Baltimore & Harrisburg Railway Co. (Western Extension)	\$2,033.96
Baltimore & Cumberland Valley Railway Company	1,852.50
The Baltimore & Cumberland Valley Rail Road Company	1,214.70
	5,101.16
	\$1,327,516.29
LESS:	
LOSS ON RETIRED ROAD AND EQUIPMENT	1,631.59
	1,325,884.70
DEBIT BALANCE DECEMBER 31, 1916	\$1,574,541.01

SYSTEM BALANCE SHEET AT DECEMBER 31, 1916.
ASSETS.

PROPERTY INVESTMENT:		
Cost of Properties Owned, Including Coal and Other Properties	\$118,041,609.48	
Securities of Other Companies—pledged	250,000.00	
		\$118,291,609.48
CURRENT ASSETS:		
Cash	\$1,755,054.71	
Loans and Bills Receivable	1,622.04	
Traffic and Car Service Balances Receivable	871,778.03	
Net Balance Receivable from Agents and Conductors	153,152.61	
Miscellaneous Accounts Receivable	724,179.41	
Material and Supplies	1,193,231.61	
Other Current Assets	25,345.90	
		4,724,364.31
DEFERRED ASSETS:		
Working Fund Advances		3,095.25
UNADJUSTED DEBITS:		
Insurance Premiums Paid in Advance	\$21,244.95	
Unextinguished Discount on Securities:		
Discount on Capital Stock	\$12,734,835.00	
Discount on Funded Debt	553,019.29	
		13,287,854.29
Other Unadjusted Debits		923,509.32
		14,232,608.56
PROFIT AND LOSS		1,574,541.01
Total		\$138,826,218.61

LIABILITIES.

CAPITAL STOCK:		
Common	\$49,429,198.40	
Preferred	10,028,000.00	
		\$59,457,198.40
MORTGAGE, BONDED AND SECURED DEBT:		
Funded Debt	\$50,282,700.00	
Collateral Trust and Other Notes	13,000,000.00	
Equipment Trust Obligations	3,684,082.83	
Automatic Block Signal Obligations	59,260.89	
		67,026,043.72
CURRENT LIABILITIES:		
Loans and Bills Payable	\$6,250,000.00	
Traffic and Car Service Balances Payable	347,766.03	
Audited Accounts and Wages Payable	973,258.76	
Miscellaneous Accounts Payable	110,405.41	
Interest Matured Unpaid	1,876,614.96	
Unmatured Interest Accrued	500,051.23	
Unmatured Rents Accrued	3,769.60	
Other Current Liabilities	27,032.83	
		10,088,898.82
DEFERRED LIABILITIES		241,641.12
UNADJUSTED CREDITS:		
Tax Liability	\$283,168.80	
Operating Reserve	156,650.50	
Accrued Depreciation—Equipment	1,211,568.44	
Other Unadjusted Credits	177,057.14	
		1,828,444.88
APPROPRIATED SURPLUS:		
Additions and Betterments to Property Through Income		183,991.67
Total		\$138,826,218.61

[Adv.]

Railway Officers

Executive, Financial, Legal and Accounting

H. A. Osgood has been appointed assistant to the vice-president of the Wabash, in charge of operation, with headquarters at St. Louis, Mo.

W. G. Vollmer has been appointed assistant to president of the Missouri Pacific, with headquarters at St. Louis, Mo., effective June 1.

F. M. Miner, general attorney for the Minneapolis & St. Louis, with office at Minneapolis, Minn., has been appointed general counsel, succeeding W. H. Bremner, promoted.

A. H. Elder, chief of the division of inquiry of the Interstate Commerce Commission, has resigned to become assistant counsel of the Central Railroad of New Jersey, with office at New York.

Lyman D. Smith, vice-president of the Lehigh Valley, with offices at New York and Philadelphia, Pa., has resigned, and will leave the service of the Lehigh Valley on July 1 to become a member of the firm of Lyman D. Smith & Co., who will engage in a general banking, investment and brokerage business in New York. Mr. Smith was born at Morristown, N. J., in 1876, and was educated at Adelphi Academy and Polytechnic Institute, Brooklyn, N. Y. On July 1, 1897, he entered the service of the Erie Railroad in the secretary's office. He was elected assistant secretary of that road on April 23, 1901, and left the service of the Erie on January 1, 1903, to become chief clerk to the financial vice-president of the Lehigh Valley at Philadelphia, Pa. He was transferred to New York and elected assistant secretary on September 1, 1905. He was appointed assistant to the president in October, 1907, and was elected vice-president in charge of finance and accounts on January 9, 1910.

E. Y. Quinn, Jr., assistant auditor of the Florida East Coast at St. Augustine, Fla., has been appointed auditor, vice C. E. Woolford, deceased, and the position of assistant auditor has been abolished.

L. S. Cass, receiver, has been elected president, and R. F. Malone, auditor, has been elected assistant secretary of the recently reorganized Kansas City Northwestern, with headquarters at Kansas City, Kan.

J. A. Baumgardner, assistant freight claim agent of the Southern Railway System at Washington, D. C., has been appointed freight claim agent, with office at Washington. H. T. White has been appointed freight claim agent in charge of a central freight claim office established on June 1, at Chattanooga, Tenn. The following freight claim agents have also been appointed: George Greaves, at Cincinnati, Ohio; J. N. Treuting, Jr., at New Orleans, La.; J. C. Emmert, at Charlotte, N. C.; Bond Anderson, at Atlanta, Ga., and P. G. Cropper, at Louisville, Ky.

Joseph J. Hooper, freight claim agent of the Southern Railway System, at Washington, D. C., has been appointed assistant to comptroller in general charge of the freight claim departments, lines east and west. He was born at Bedford City, Va., and graduated from the high school of Selma, Ala. He began rail-

way work as a clerk in the local freight office of the Southern Railway, and was steadily promoted until 1900 when he became chief executive of the freight claim office and one year later was promoted to freight claim agent. Since 1907, he has served continuously as chairman of the Appeal Committee of the Freight Claim Association, having become associated with this organization about twenty years ago. He served as its vice-president in 1902 and its president in 1903, and on May 18, was elected to represent all members of this association on the bill of lading investigation before the Interstate Commerce Commission. He has also served as chairman of different commissions including the Conference Committee with the Interstate Commerce Commission.

Finley J. Shepard, whose election as vice-president of the recently organized Missouri Pacific Railroad Company was announced in the *Railway Age Gazette* of May 25, was born in Connecticut in October, 1867. He entered railway service with the Northern Pacific in 1889. For four or five years he was employed in the accounting and treasury departments of that road, following which he was for four years assistant general manager. From 1901 to February, 1902, he was on the staff of the vice-president of the Atchison, Topeka & Santa Fe, and from the latter date until 1905 was general superintendent of the Coast Lines of that road. He engaged in private business from 1905 until 1911, and in January, 1912, was appointed assistant to the president of the Denver & Rio Grande, retaining that position until the separation of that road from the Missouri Pacific system. He was appointed assistant to the president of the Missouri Pacific-St. Louis, Iron Mountain & Southern on December 1, 1912, becoming assistant to the receiver when the system went into the hands of receivers in August, 1915.

W. T. Tyler, whose election as first vice-president of the St. Louis Southwestern Railway of Texas was announced in the *Railway Age Gazette* of June 1, was born at Janesville, Wis., on July 29, 1870. He entered railway service with the Wisconsin Central as messenger in June, 1883, and was later an operator and dispatcher on the same road. In 1889, he was employed as a brakeman on the Milwaukee, Lake Shore & Western, now a part of the Chicago & North Western. In the two subsequent years he was brakeman and conductor on the Northern Pacific, and from 1891 to 1900, was consecutively yardmaster, trainmaster and superintendent on the Great Northern. He was appointed superintendent on the St. Louis, Iron Mountain & Southern in 1900, and from 1901 to 1906 was general superintendent. In the eight succeeding years he was successively general superintendent and general manager of the St. Louis & San Francisco. In 1915 he was appointed superintendent on the Northern Pacific, with headquarters at Pasco, Wash.; and on February 1, 1917, he became general manager of



L. D. Smith



F. J. Shepard



W. T. Tyler

the St. Louis Southwestern Lines, with headquarters at Tyler, Tex. He was elected first vice-president of the St. Louis Southwestern Railway of Texas, with headquarters at Tyler, on May 15, succeeding J. W. Everman, who was elected second vice-president.

F. P. Gutelius, who has been appointed vice-president of the Delaware & Hudson in charge of the operating and accounting departments, with headquarters at Albany, N. Y., as has already



F. P. Gutelius

been announced in these columns, was born on December 21, 1864, at Mifflinburg, Pa., and graduated from Lafayette college as a civil engineer in 1887. He began railway work in 1888, and served consecutively as assistant engineer and assistant supervisor of the Pennsylvania Company at Pittsburgh, Pa., until 1892. He then was appointed general superintendent of the Columbia & Western, and from 1898 to 1900 he was division superintendent of its successor, the Canadian Pacific. He was then to 1902 in various positions

in the engineering department of the same road, and later to March, 1906, was engineer maintenance of way at Montreal, Que. From March, 1906, to September, 1908, he was assistant chief engineer, and then was general superintendent of the Lake Superior division. From January, 1911, to February of the following year he served as general superintendent of the Eastern division of the same road at Montreal, and then resigned to become a member of the Canadian Government Commission to investigate transactions involved in the construction of the National Transcontinental. He subsequently was appointed general manager of the Canadian Government Railways at Moncton, N. B., which position he held at the time of his recent appointment as vice-president of the Delaware & Hudson, as above noted.

Operating

W. W. Bates, inspector of transportation of the Delaware & Hudson at Albany, N. Y., has been appointed superintendent of personnel, with office at Albany.

Robert E. Lee has been appointed acting manager of the mining and fuel department of the Chicago, Rock Island & Pacific, with headquarters at Chicago, to succeed Carl Scholz, resigned to accept service with another company.

E. B. Hall, assistant to the general superintendent of motive power of the Chicago & North Western at Chicago, Ill., has been appointed acting assistant superintendent at Milwaukee, Wis., succeeding P. Campbell, granted leave of absence.

W. H. McBean has been appointed trainmaster of the Salt Lake division of the Southern Pacific, with headquarters at Sparks, Nev., to succeed L. L. Browne, resigned. William Johnson has been appointed chief despatcher, with office at Ogden, Utah.

John R. Jones, assistant chief train despatcher of the Iowa division of the Chicago, Rock Island & Pacific at Des Moines, Iowa, has been appointed chief train despatcher, succeeding F. A. Parker, granted an indefinite leave of absence to serve as first lieutenant in Company B, Third Reserve Engineers.

P. F. Keating, superintendent of the Willmar division of the Great Northern, with headquarters at Willmar, Minn., has been transferred to Whitefish, Mont., as superintendent of the Kalispell division, succeeding H. W. Sheridan, resigned. J. E. O'Brien, trainmaster at Breckenridge, Minn., succeeds Mr. Keating.

R. L. Scott, trainmaster of the New York Central at Oswego, N. Y., has been appointed trainmaster of the Buffalo division,

with office at Buffalo. F. J. Towse has been appointed trainmaster of the Ontario division, and R. W. Nutting has been appointed assistant trainmaster of the Ontario division. Both with offices at Oswego.

The La Crosse and the northern divisions of the Chicago, Milwaukee & St. Paul will hereafter be operated separately. N. P. Thurber, superintendent, and F. J. Holmes, trainmaster, will retain jurisdiction over the La Crosse division. B. F. Van Vliet, superintendent of the Iowa & Dakota division, with headquarters at Mason City, Ia., has been appointed superintendent of the northern division, with headquarters at Milwaukee, Wis. M. Sawyer, division superintendent at Spokane, Wash., succeeds Mr. Van Vliet.

W. L. Booth, superintendent of freight transportation of the Chesapeake & Ohio, at Richmond, Va., has been appointed general superintendent of transportation (freight and passenger), with office at Richmond; J. B. Parrish, assistant superintendent of freight transportation at Huntington, W. Va., has been appointed superintendent of freight transportation, with office at Cincinnati, O.; J. H. Carlisle, assistant to general manager at Richmond, has been appointed assistant superintendent of freight transportation, with office at Richmond, and his former position has been discontinued.

J. Cannon, general superintendent of the eastern district of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed acting general superintendent of transportation, with office at St. Louis, succeeding J. A. Somerville, temporarily assigned to the commission on car service of the American Railway Association, Washington, D. C. W. E. Brooks, superintendent of terminals at Kansas City, Mo., succeeds Mr. Cannon as acting general superintendent, and D. T. Crawford, assistant superintendent at Omaha, Neb., takes the place of Mr. Brooks as acting superintendent of Kansas City terminals.

Frank J. Moser, superintendent of the New York division and branches of the Erie at Jersey City, N. J., has been appointed superintendent of terminals with office at Jersey City, vice Frederick B. Lincoln, resigned to accept service elsewhere; Charles P. Eckels, superintendent of the Susquehanna and Tioga divisions at Hornell, N. Y., has been appointed superintendent of the New York division with office at Jersey City, vice Mr. Moser; Harold R. Cole, assistant superintendent of the New York division at Jersey City, has been appointed superintendent of the Susquehanna division with office at Hornell, vice Mr. Eckels, and Albert M. Kelly, trainmaster at Jersey City, succeeds Mr. Cole.

M. F. MacLaren, superintendent of the Burlington division of the Chicago, Burlington & Quincy at Burlington, Iowa, has been appointed superintendent of the La Crosse division, with headquarters at La Crosse, Wis., vice E. Flynn, transferred; N. H. Young, division superintendent at Chicago, succeeds Mr. MacLaren; E. Flynn, division superintendent at La Crosse, Wis., has been appointed superintendent of the Chicago division, with headquarters at Chicago, vice Mr. Young, and C. D. Peckenpaugh, superintendent at McCook, Neb., has been appointed superintendent of the Aurora division, with headquarters at Aurora, Ill., vice H. W. Maxwell, who has been appointed superintendent at McCook, succeeding Mr. Peckenpaugh.

Carlos A. Hayes, general traffic manager of the Canadian Government Railways at Moncton, N. B., has been appointed general manager, succeeding F. P. Gutelius, resigned to go to another company. Mr. Hayes was born on March 10, 1865, at West Springfield, Mass., and began railway work in April, 1882. He held various positions in a clerical capacity in the accounting and general freight departments of the Boston & Maine at Springfield and Boston, Mass., until November, 1890, and then to June, 1892, was general freight and passenger agent of the Central New England & Western, now the Central New England, at Poughkeepsie, N. Y. From June to October, 1892, he served as division freight agent of the Philadelphia & Reading, and then entered the service of the Grand Trunk as New England agent at Boston, Mass., of its National Despatch Fast Freight Line, in 1896 becoming manager of the same line, first at Boston and later at Buffalo. On May 1, 1903, he was appointed assistant general freight agent of the Grand Trunk at Chicago; five years later he was promoted to general freight agent at Montreal, Que., and in September, 1911, became freight traffic manager of the same road. On July 1, 1913, he was appointed general traffic

manager of the Canadian Government Railways, and on June 1, was promoted to general manager of the same roads, as above noted.

Louis C. Fritch, general manager of the eastern lines of the Canadian Northern, has been appointed general manager of the Seaboard Air Line, with headquarters at Norfolk, Va., effective June 15. He succeeds C. S. Lake, resigned. Mr. Fritch was born in 1868 at Springfield, Ill., and took a course in civil engineering in the University of Cincinnati. Subsequently he took a course in law, and was admitted to the bar in Ohio. He began railway work in 1884 as supervisor's assistant on the Ohio & Mississippi. From January, 1886, to October, 1892, he was assistant engineer, and then to November, 1893, engineer maintenance of way of the same road, succeeding to the position formerly filled by the chief engineer and master maintenance of way. He was also chief engineer in charge of construction on the Cincinnati & Bedford. On November 1, 1893, he was appointed division engineer of the Baltimore & Ohio Southwestern, which absorbed the Ohio & Mississippi. From September, 1899, to November, 1902, he was superintendent of the Mississippi division of the same road. In February, 1904, he went to the Illinois Central, at Chicago, and was engaged in special work until March, 1905, when he became assistant to the general manager of the same road. He was appointed assistant to the president in November, 1906, and from March 1 to November, 1909, was consulting engineer of the same road. He was then appointed chief engineer of the Chicago Great Western, and in March, 1914, he was appointed assistant to the president of the Canadian Northern. In August, 1915, he was appointed general manager of the lines east, and on June 15 leaves that road to go to the Seaboard Air Line as general manager, as above noted.



L. C. Fritch

Traffic

H. H. Muchall has been appointed assistant general passenger agent of the Missouri Pacific, with headquarters at St. Louis, Mo.

T. B. Gallaher has been appointed division freight and passenger agent of the Gulf, Colorado & Santa Fe, with headquarters at Amarillo, Texas.

C. McD. Adams has been appointed general agent of the El Paso & Southwestern system at St. Louis, Mo., in place of G. W. Feakins, assigned to other duties.

J. W. Mount has been appointed assistant general freight agent of the Oregon-Washington Railroad & Navigation Company, assigned to the handling of interstate and state rate cases.

W. J. Chisholm, traveling freight agent of the Toledo & Western, with headquarters at Toledo, Ohio, has been appointed traffic manager, with office at Toledo, to succeed A. C. Wegner, resigned, effective June 1.

S. M. Childs, joint district passenger agent of the Chicago & Eastern Illinois and the St. Louis-San Francisco at Indianapolis, Ind., has been appointed general agent, passenger department, of these companies jointly, at Chicago, Ill., succeeding J. F. Govan, transferred to Pittsburgh, Pa.

C. C. P. Rausch, general freight agent of the Missouri Pacific at St. Louis, Mo., has been promoted to assistant freight traffic manager, with headquarters at St. Louis, and the office of general freight agent has been abolished; J. N. Githens, assistant freight traffic manager at St. Louis, has resigned, his duties being assumed by the freight traffic manager.

E. B. A. Kellum, traveling passenger agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed general agent, passenger department, at Cleveland, succeeding E. E. Smith, who has been transferred to Chicago, Ill., to succeed E. R. Whelen, transferred.

J. K. Ridgely, assistant general passenger agent of the Louisville & Nashville at New Orleans, La., has been appointed general passenger agent of the lines south of Birmingham, Ala., with headquarters at New Orleans, and the office of assistant general passenger agent at New Orleans has been abolished.

H. M. Brown, district passenger agent of the Chicago, Rock Island & Pacific at Philadelphia, Pa., has been appointed general agent, freight and passenger departments, with office at Washington, D. C. He will be succeeded by G. F. Ramspacher, now commercial agent at Philadelphia, who will have the title of general agent, freight and passenger departments.

V. E. Whitaker, general agent of the Atlanta, Birmingham & Atlantic, at Atlanta, Ga., has been promoted to general agent, with office at Birmingham, Ala., vice I. W. Rouzer, resigned to accept service elsewhere. R. H. McKay, division freight agent at Fitzgerald, Ga., has been promoted to general agent at Atlanta, vice Mr. Whitaker; A. V. B. Gilbert has been appointed division freight agent at Fitzgerald, vice Mr. McKay, and W. G. Hardy has been appointed general agent at Talladega, Ala., vice J. W. Willis, resigned.

Archibald Donald Bell, whose appointment as general passenger agent of the Texas & Pacific, with headquarters at Dallas, Tex., was announced in our issue for May 25, was born on August 4, 1876, at Chicago. He began railway work on September 1, 1889, with the Chicago, St. Paul & Kansas City, and remained with that road and its successor, the Chicago Great Western, until September, 1899, being employed in various capacities from messenger to rate clerk. From the latter date until February, 1901, he was with the International & Great Northern as rate and division clerk in the general passenger department at Palestine, Tex., and the following two months he was rate and division clerk for the St. Louis Southwestern at Tyler, Tex. He was then for six months with the Western Passenger Association as rate clerk at Chicago, and from September, 1901, to February, 1905, was special excursion rate clerk for the Southern Railway at Washington, D. C. On the latter date he returned to the St. Louis Southwestern, at Tyler, as chief rate clerk in the passenger department, and in July of that year was made chief clerk of the general passenger department at the same place. On October 15, 1911, he was appointed assistant general passenger agent of the Texas & Pacific, which position he held until his recent promotion to general passenger agent, as noted above.

H. H. La Vine, ticket agent of the Chicago Great Western at Marshalltown, Iowa, has been appointed district passenger agent, with headquarters at Philadelphia, Pa., in place of W. M. McConnell, deceased. J. H. Cummings, traveling freight and passenger agent, with headquarters at Edmonton, Alta., has been appointed district passenger agent at Dallas, Tex. Robt. J. Sefton, traveling passenger agent, with office at Seattle, Wash., has been transferred to Kansas City, Mo., as district passenger agent, succeeding H. B. Bryning, resigned.

Joseph A. Werne, whose appointment as general freight agent of the Southern Railway System with headquarters at Memphis, Tenn., has already been announced in these columns, was born on October 3, 1875, and was educated in the Louisville High School. He began railway work in January, 1892, with the



A. D. Bell

Louisville Southern, now a part of the Southern Railway, at Louisville, Ky., and later served as correspondence clerk and bill of lading clerk, on the same road until January, 1896, when he was appointed contracting freight agent of the Chesapeake & Ohio, at Louisville, Ky. In July, 1897, he was appointed traveling freight agent of the same road at Louisville, Ky., and in November, 1898, was transferred in the same capacity to Memphis, Tenn. From June, 1901, to July, 1902, he was southwestern agent of the Kanawha Dispatch, at Memphis, Tenn., and then was agent of the Blue Ridge Dispatch until July, 1907, when he was appointed soliciting freight agent of the Southern Railway at Louisville, Ky. In January, 1912, he became commercial agent, and from April, 1913, to May, 1917, was New England freight agent of the same road.

Engineering and Rolling Stock

Paul Sterling, whose appointment as maintenance engineer of the lines west of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has already been announced in these columns, graduated from Sheffield Scientific School, Yale University, in 1892, and the following year entered the service of the New York, New Haven & Hartford. He served as transitman and assistant engineer until 1902 and then was out of railway service until 1904, when he returned to the New Haven as transitman. In 1906 he was appointed assistant division engineer and has since served as division engineer on the Western division and also on the New York division of the same road.



P. Sterling

J. E. Bernhardt, assistant engineer on the Chicago & Eastern Illinois, with headquarters at Chicago, Ill., has been appointed bridge engineer, with the same headquarters.

G. A. Moriarty, who has been promoted to the newly created position of mechanical superintendent of the New York, New Haven & Hartford, lines east, with headquarters at Boston, Mass., as has already been announced in these columns, began railway work in 1887 as a machinist apprentice on the Baltimore & Ohio. He subsequently served on several different roads as machinist, and then returned to the service of the Baltimore & Ohio as machine shop foreman. He was later with the Erie, and served in different positions on that road. In 1907 he went to the New York, New Haven & Hartford as master mechanic, and in January, 1917, was appointed general master mechanic, which position he held at the time of his recent appointment as mechanical superintendent of the lines east, of the same road, as above noted.



G. A. Moriarty

The office of William Schlafge, general mechanical superintendent of the Erie, has been removed from New York to Meadville, Pa. The headquarters of both the mechanical and stores departments are now at Meadville.

W. W. Scott has been appointed shop superintendent of the Buffalo, Rochester & Pittsburgh with office at Punxsutawney, Pa.

H. T. Whitney has been appointed assistant division engineer of the Michigan division of the Pittsburgh, Cincinnati, Chicago & St. Louis, with headquarters at Logansport, Ind., in place of E. H. May, transferred; effective June 1.

C. J. Stewart, who has been appointed to the recently created position of mechanical superintendent of the New York, New Haven & Hartford, lines west, with headquarters



C. J. Stewart

at New Haven, Conn., began railway work with the Erie as a caller. He subsequently served consecutively as engine despatcher, special apprentice, fireman, engine inspector and foreman on the same road. He then entered the service of the Delaware, Lackawanna & Western as machinist, and later served as foreman and general foreman until 1905, when he went to the Central New England as master mechanic. In 1913 he was appointed assistant mechanical superintendent of the New York, New Haven

& Hartford, at New Haven, Conn., which position he held at the time of his recent appointment as mechanical superintendent of the lines west of the same road, as above noted.

H. H. Maxfield, whose appointment as superintendent of motive power of the New Jersey division of the Pennsylvania Railroad, with office at New York, has already been announced in these columns, was born in 1873 and was educated at Stevens Institute. He entered the service of the Pennsylvania Railroad on September 5, 1885, as an apprentice in the Meadow shops and on August 1, 1899, he became machinist and in March, 1900, inspector and gang leader. He was promoted in December, 1902, to assistant master mechanic at the Pavonia shops of the Trenton division and in April, 1903, was appointed assistant engineer of motive power of the New Jersey division at Jersey City. On April 1, 1905, he was appointed master mechanic of the Trenton division and in July, 1911, was transferred to the Pittsburgh division in the same capacity. On May 1, 1916, he was promoted to superintendent of



H. H. Maxfield

C. F. Yardley, division engineer of maintenance of way of the Hartford division of the New York, New Haven & Hartford, with office at Hartford, Conn., has been appointed maintenance engineer of the New York division, with headquarters at Harlem river, New York; G. A. DeMore, track supervisor at New Haven, Conn., has been promoted to division engineer at Hartford, Conn., succeeding Mr. Yardley; R. L. Pearson, division engineer of maintenance of way of the New London division at New London, Conn., has been transferred to Providence, R. I., as division engineer of the Providence division, succeeding W. D. Warren, promoted; R. J. Bieth, track supervisor at South Braintree, Mass., has been promoted to division engineer at New London, succeed-

ing R. L. Pearson; J. W. Pearson, division engineer of maintenance of way of the Old Colony division at Taunton, Mass., has been transferred to Boston, Mass., as division engineer of the Boston division, and S. A. Kinzie, track supervisor at Framingham, Mass., has been promoted to division engineer, succeeding J. W. Pearson.

Purchasing

W. J. Hiner, assistant purchasing agent of the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed purchasing agent, at Cincinnati, Ohio, succeeding George Tozzer, retired.

Railway Officers in Military Service

Lester E. Blodgett, assistant engineer of the Pere Marquette, has enlisted in the Officers' Reserve Corps, United States Army.

Harvey Clark, local attorney for the Kansas City Southern at Nevada, Mo., is brigadier general in command of the Missouri National Guard.

R. A. Brown, commercial agent of the Wabash at Cleveland, Ohio, has received a commission in the Officers' Reserve Corps of the United States Army.

P. J. Watson, Jr., assistant engineer of the Chicago & Alton at Bloomington, Ill., has been granted an indefinite leave of absence to enter the officers' reserve training camp at Ft. Sheridan, Ill.

Cassius E. Carson, superintendent of the Ft. Dodge, Des Moines & Southern, with headquarters at Boone, Ia., has been recommended for captain adjutant in the second battalion of the Third Reserve Engineers.

Grove C. Kennedy, chief dispatcher of the Gulf, Colorado & Santa Fe at Beaumont, Tex., has received a commission as first lieutenant in the Santa Fe company of the Chicago railway regiment, the Third Reserve Engineers.

Nathaniel L. Howard, division superintendent of the Chicago, Burlington & Quincy at Hannibal, Mo., has been recommended for a commission as lieutenant colonel in the Chicago railway regiment, the Third Reserve Engineers.

Thomas W. Fatherson, engineer maintenance of way of the Chicago Great Western at Des Moines, Ia., has been recommended for a commission as captain engineer in the Chicago railway regiment, the Third Reserve Engineers.

Charles L. Whiting, superintendent of the northern Montana division of the Chicago, Milwaukee & St. Paul, Lewistown, Mont., has been recommended for the commission of major in the second battalion of the Third Reserve Engineers.

Elmer E. Stoup, trainmaster of the Chicago Great Western, Des Moines, Ia., has been recommended for the commission of captain in the Chicago railway regiment, the Third Reserve Engineers. Sidney V. Rowland, assistant superintendent, Red Wing, Minn., has been recommended for first lieutenant in the Third Reserve Engineers.

Alexander Young, district master mechanic of the Chicago, Milwaukee & St. Paul at Milwaukee, Wis., has been recommended for a commission of captain in the Third Reserve Engineers. Thomas E. Horton, train dispatcher at La Crosse, Wis., has been recommended for first lieutenant in the Third Reserve Engineers. Fred W. Sawtelle, roadmaster at Horicon, Wis., has been recommended for second lieutenant in the same regiment.

F. P. Nash, general foreman of shops of the Illinois Central, Palestine, Ill., has been recommended for a commission as first lieutenant in the Illinois Central company of the Chicago railway regiment, the Third Reserve Engineers. George T. Sheehan, yardmaster at New Orleans, La., has been recommended for first lieutenant in the Third Reserve Engineers. James W. Kern, Jr., supervisor at Mounds, Ill., has been recommended for second lieutenant in the same regiment.

Guy A. Holmes, assistant superintendent of the Chicago & Northwestern at East Clinton, Ill., has been recommended for a commission as captain in the Third Reserve Engineers. E. H. Shaughnessy, trainmaster at Chicago, has been recommended for first lieutenant in the Third Reserve Engineers. Edward Schultz, master mechanic at Chicago, has been recommended for first lieutenant, and Walter S. Johnston, chief train dispatcher at

South Pekin, Ill., has been recommended for second lieutenant in the same regiment.

B. W. Guppy, engineer of structures of the Boston & Maine, went to the training camp at Plattsburg, N. Y., as a major in the Officers' Reserve Corps and is now attached to the staff of the commanding officer of the operating regiment which is enlisting men from the New England railways for service in France. Ralph Bradley, inspector of fuel service of the same road, is a second lieutenant in the Second Massachusetts Field Artillery, but has not yet been called to service. John T. Crawford, assistant solicitor, is now on duty as a first lieutenant in the Ninth Massachusetts Infantry.

Victor H. Hagelberger, trainmaster of the Chicago, Rock Island & Pacific, Bureau, Ill., has been recommended for the commission of captain in the Chicago railway regiment, the Third Reserve Engineers. Frank A. Parker, chief dispatcher, Des Moines, Ia., has been recommended for first lieutenant in the Third Reserve Engineers. Stephen E. Mueller, general foreman, locomotive department, Cedar Rapids, Ia., has been recommended for first lieutenant in the Third Reserve Engineers. William E. Haberlaw, roadmaster at Rock Island, Ill., has been recommended for second lieutenant in the same regiment.

John L. May, trainmaster of the Portland division of the Southern Pacific, has been relieved for duty with the Oregon National Guard, with which he is commissioned as colonel. Theodore H. Kruttschnitt, assistant superintendent, Tucson division, was appointed captain in the Officers' Reserve Corps on April 1, and left for Ft. Sam Houston, Tex., on May 20. Charles M. Murphy, trainmaster, Tucson division, was appointed captain in the Officers' Reserve Corps on May 1, and left on May 20 for Ft. Sam Houston. Leroy Foster, assistant chief dispatcher, Tucson division, was appointed captain in the Officers' Reserve Corps on April 23, but on account of illness has not yet left for service.

F. G. Jonah, chief engineer of the St. Louis-San Francisco, has been given a commission as major in the Engineering Officers' Reserve Corps. J. H. Brooking, pilot engineer in the valuation department, has applied for a commission as first lieutenant, and J. J. Callahan, computer in the valuation department, has applied for a commission as second lieutenant in the Second Reserve Engineers, St. Louis, Mo. H. F. McFarland, assistant engineer, and F. D. Nash, pilot engineer, have both applied for commissions as first lieutenants in the same regiment. P. Topping and Emery Wells, assistant engineers at St. Louis, Mo., have applied for commissions as captain and lieutenant, respectively, in the Engineering Officers' Reserve Corps. They are now in training at Ft. Riley, Kan. J. D. Wright, concrete inspector, has applied for a commission as second lieutenant and is also in training at Ft. Riley, Kan.

OBITUARY

Benjamin J. Hughes, district superintendent of the Atlantic Coast Line at Norfolk, Va., died on May 29, in that city.

George W. Creighton, general superintendent of the Eastern Pennsylvania division of the Pennsylvania Railroad, at Altoona, Pa., died on June 3, in a hospital at Philadelphia. He was born on June 22, 1856, at Philadelphia, and began railway work in January, 1878, as rodman on engineer corps of the Madeira & Mamore Railway, in Brazil. In October, 1879, he entered the service of the Pennsylvania Railroad as rodman in the engineer corps, and subsequently served consecutively as assistant supervisor and supervisor at Baltimore, Md., and then as assistant engineer. On January 1, 1891, he was promoted to superintendent of the Bedford division, and later served in the same capacity on the Shamokin and Sunbury divisions and the Middle division of the Pennsylvania Railroad. In January, 1899, he was appointed general superintendent of the Philadelphia & Erie division and the Northern Central Railway, and on August 1, 1900, became general superintendent of the Buffalo & Allegheny Valley division. On January 1, 1903, he was appointed general superintendent of the Pennsylvania Railroad division, and upon a change in the organization dividing the Pennsylvania Railroad division into the Eastern and Western divisions on April 1, 1907, he became general superintendent of the Eastern Pennsylvania division.